UNIV. OF MICHIGAN
DEC 18 1950
ENGINEERING
LIBRARY

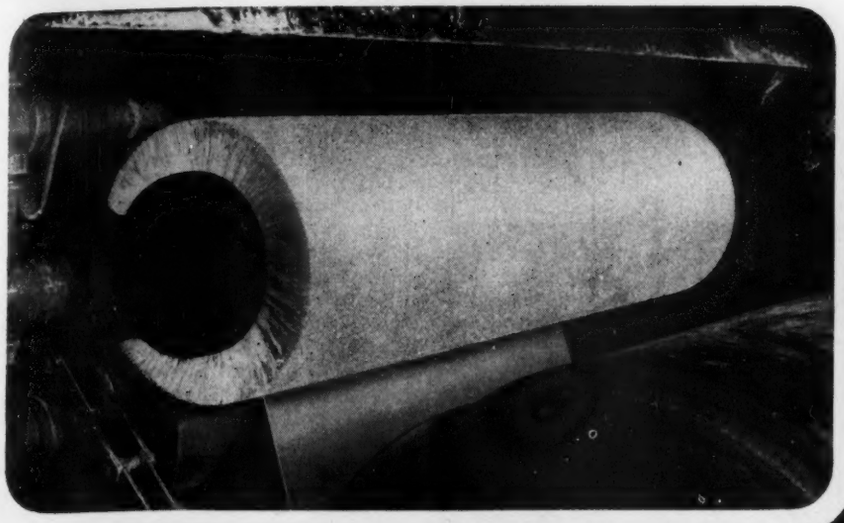
December 18, 1950

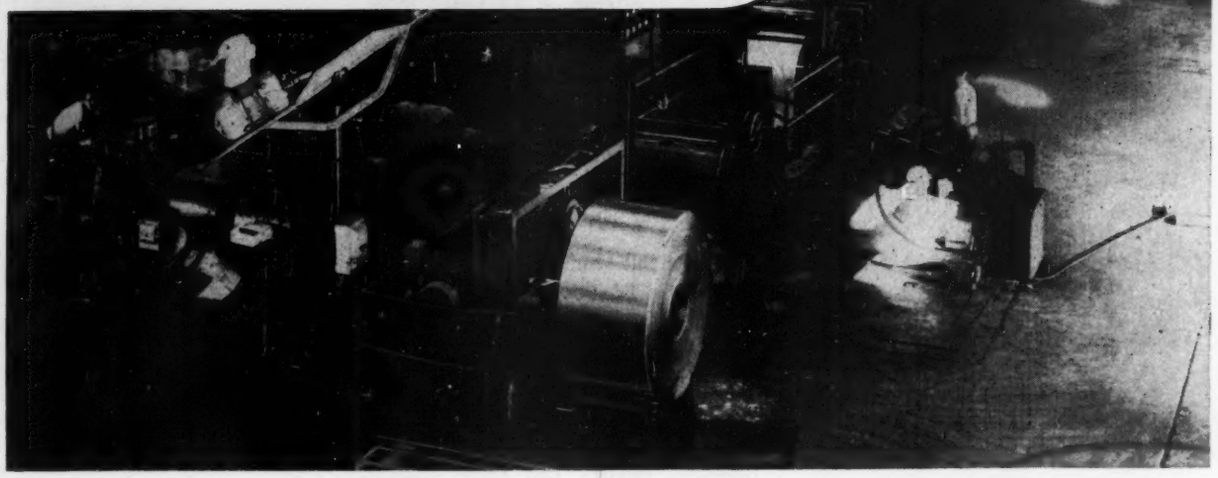
STEEL

The Magazine of Metalworking and Metalproducing

CONTENTS — PAGE 57

Another cost-saving advantage for users of
B&W
MECHANICAL
TUBING
TAILOR-MADE
WORKABILITY
FOR
Machining - Forming - Bending - Joining
You have a wide choice of
B&W MECHANICAL TUBING
TYPES—Seamless (hot finished, cold drawn or rocked). Welded (from hot or cold rolled strip).
GRADES—Carbon, Alloy, and Stainless Steels.
SIZES—Up to 9¾" O.D. in full range of wall thicknesses.
QUALITY—Open-hearth and electric furnace steels, including aircraft and magnaflux qualities.
CONDITION—Unannealed, annealed, tempered, normalized, or otherwise heat-treated as required.
SURFACE FINISHES—As rolled, as drawn, as welded, flash removed, turned, scale-free, and polished.
SHAPES—Round, square, rectangular, oval, streamlined, and special shapes.
FABRICATION—Upsetting, expanding, bending, safe-ending, and machining.
B&W
SEAMLESS and WELDED
TUBES
TA-1509
THE BABCOCK & WILCOX TUBE COMPANY • General Offices: Beaver Falls, Pa. • Plants: Alliance, Ohio and Beaver Falls, Pa.





Strip comes clean at *1500 feet per minute* with OSBORN power driven brushes

ON the *continuous* scrubbing operation above, Osborn Power Brushes are removing all traces of rolling oil from steel strip at a rate of *over 1500 feet per minute.* Since a micro-thin coating of tin is later added by electroplating, any foreign matter remaining creates costly scrap and ties up plant operations. Six Osborn Heli-Master* Brushes here provide dependable around-the-clock performance despite the presence of hot caustic solvents.

Whether you have a continuous metal cleaning, sheet scrubbing, scale removing, bonderizing or conveyor cleaning problem, it is likely that an **OBA** (**O**sborn **B**rushing **A**nalysis) will show you how this work can now be done easier, faster and at lower cost with power brushing. Likewise there are many other new, improved Osborn techniques for mechanically brushing a wide variety of finishes on metals, plastics and other materials. Why not request an **OBA** be made of your finishing operations now. Call or write—*The Osborn Manufacturing Company, Dept. 368, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

*Trademark

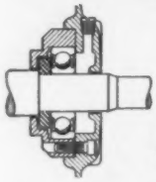
YOU CAN IMPROVE FINISH AND CUT COSTS BY BRUSHING

LOOK FOR THE NAME OSBORN® **RECOGNIZED EVERYWHERE FOR THOROUGH APPLICATION ENGINEERING**

"All Motors are NOT alike!"

15 Reasons Why

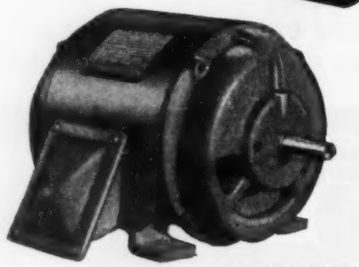
the RELIANCE® Bearing Design is the BEST one!



RELIANCE double-shielded, pre-lubricated bearing mounted in bearing cap.

The Reliance Pre-lubricated Bearing Design has all of the features vital to maximum motor life. Get proof of this additional way that all Reliance PRECISION-BUILT Motors are made *better*—to deliver dependable power longer! Write today for *NEW* Bulletin B-2201 which features a convenient chart on which you yourself can check the 15 reasons why the Reliance PRECISION Bearing Design is the BEST one.

RELIANCE Precision-Built MOTORS



Reliance PRECISION-BUILT A-c. Motors from ¼ to 300 hp.

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

1081 Ivanhoe Road • Cleveland 10, Ohio

"All Motors are NOT Alike"

Behind the Scenes . . .

More To Kum

"More copy coming." That's the phrase the editors upstairs have been getting with increasing frequency over the telephone or by wire from Ed Kreutzberg, STEEL's man behind the scenes in Washington. His typewriter has been especially hot since the Korean war, giving you readers the government developments as they affect metalworking, both in his column, Windows of Washington (p. 72), and in the regular news pages of the book.

Ed is a veteran of 40 years with STEEL and has served you in New York and Cleveland, as well as in Washington where he took over the beat in 1946. A graduate of Princeton, he was STEEL's New York representative for many years. In that period he knew well such industry figures as Judge Gary, Charles Schwab and Eugene Grace.

His good relations with Judge Cary helped him initiate in the 1920s the first report on steel distribution. That report grew to a regular monthly feature in this magazine. Eventually in the 1930s, the job of gathering the distribution figures was taken over by the American Iron & Steel Institute. The institute's widely known monthly distribution reports had their genesis nearly 30 years ago when Ed had a talk with Judge Gary. The judge was enthusiastic about the project and gave Ed access to the necessary figures of U. S. Steel Corp. and its subsidiaries. That broke the ice and ultimately nearly all steel firms cooperated.

Ed's news-gathering techniques work as well today in Washington as they did years ago in New York. Part of the secret is this: He gets to know the people who make news or have access to little-known information. As those people get acquainted with him, they begin giving him the news behind the news for STEEL. His offices are in the National Press building.

Return

We have said nothing about it, because we believe in keeping a stiff upper lip, but for some weeks we have been without the services of our night editor, Geraldine, who doubles as a cleaning woman in our building. She was transferred to duties on the fourth floor. We're relieved to report that we've pulled some wires, talked to the right people and now have her back with us. Her first item shows she hasn't lost her eagle eyes for typographical inconsistencies.

The name of a Cleveland firm, she says, reads Blank, Blank & Blank Co. on a sign above its building; Blank-Blank & Blank Co. on its office window; but Blank Blank & Blank Co. on its trucks.

Translation

"Frozen." That's the editors' word you'd be hearing frequently if you were scouting around in their bailiwick now. They mean that the planning, shaping and revising stages for the annual issue to come out Jan. 1 are now over and that the heat's on to translate those plans into type, etchings and engravings for your perusal.

We've seen enough of the original copy to say that what will reach you will be of interest and service. Want to know what your company will be doing in sales ten years hence? One feature of the issue will help you find out. How did the screw machine products industry do in 1950? Data on that and hundreds of other subjects will be available in a Facts & Figures section. What's the outlook for extrusions in industry? Technical forum discussions will give you an insight into the practical prospects for that metalworking technique.

Puzzle Corner

The correct answer to the Dec. 4 problem is: Both arrive at their destinations at 10:10 a.m. First in with the correct answer were M. S. Bailey of Machine Products Corp., T. S. Bean of Barber & Ross Co., E. J. Hughes of Continental Tramway Co. and Robert, son of R. W. Huff of Republic Steel Corp.

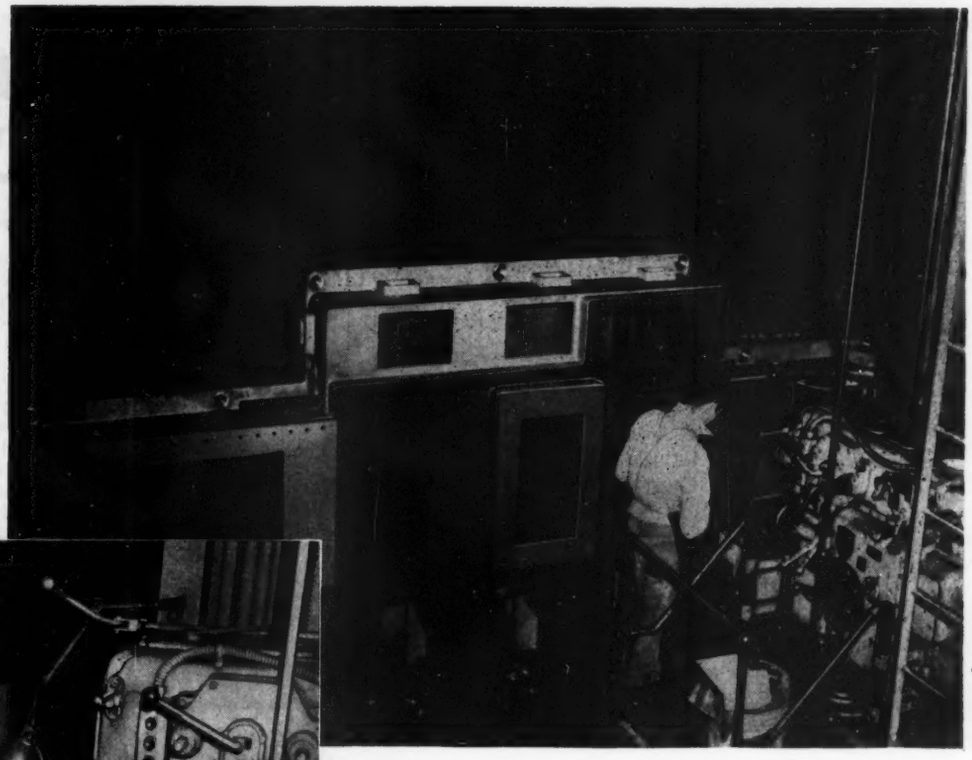
One of seven guests of a restaurant dined there each day; a second guest dined there every second day; a third every third day, and so on to the seventh who ate there once every seventh day. After how many days would the entire seven appear at the same time?

Shrdlu

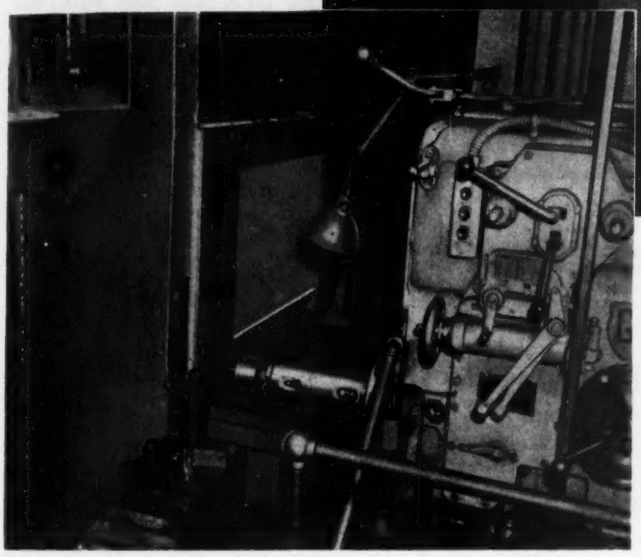
(Editorial Index—page 57)

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

This G. & L. Floor Type Machine is used by a leading machine tool manufacturer to perform precision operations on a large way machine base where overall machining accuracy must be closely held.



Boring a series of locating pin holes for mounting unit heads on a way machine. These holes must be parallel within .001" of the base sides and provide the same tolerance for unit location both horizontally and vertically.



1 Machine Scales and Vernier Used to Locate Precision Bearing Bores

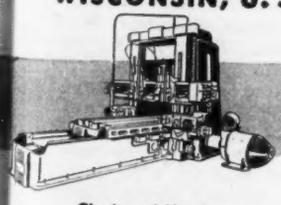
Another typical example of the built-in accuracy of G. & L. machines is the precision boring of a large machine tool base on which a machine table will be mounted. Three finish bores, 22.500" — 20.000" — 20.000", are made with a special boring head and held to a tolerance of .001". Machine scales and verniers are used to locate these bores. The dependability of G. & L. horizontal boring machines in producing important machine tool components makes it possible to produce more accurate units at less cost.

2 Manufacturers Rely on the Accuracy of Giddings & Lewis Machines to Bore Vital Locating Pin Holes

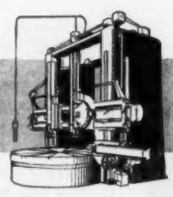
Rigid accuracy requirements are readily maintained with a G. & L. floor type horizontal boring machine in boring locating pin holes on a way machine base. Two way units are mounted on the opposing wings of the base and pin holes must be held parallel to ±.001" with the side of the strip for unit location vertically as well as horizontally. In addition to the precision boring on the wing, other machining operations are performed in the same work setting insuring accurate relationship of the machined surfaces, bores, drilled and tapped holes, etc., for final assembly.

If you wish to lower your production costs and meet urgent delivery demands, G. & L. engineers will gladly study your machining problems and submit recommendations on simpler methods using horizontal boring, drilling and milling machines.

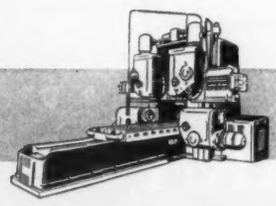
MACHINE TOOL COMPANY
WISCONSIN, U. S. A.



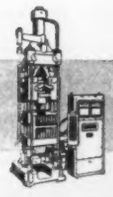
Cincinnati Hypro Double Housing Planer



Cincinnati Hypro Vertical Boring and Turning Mill



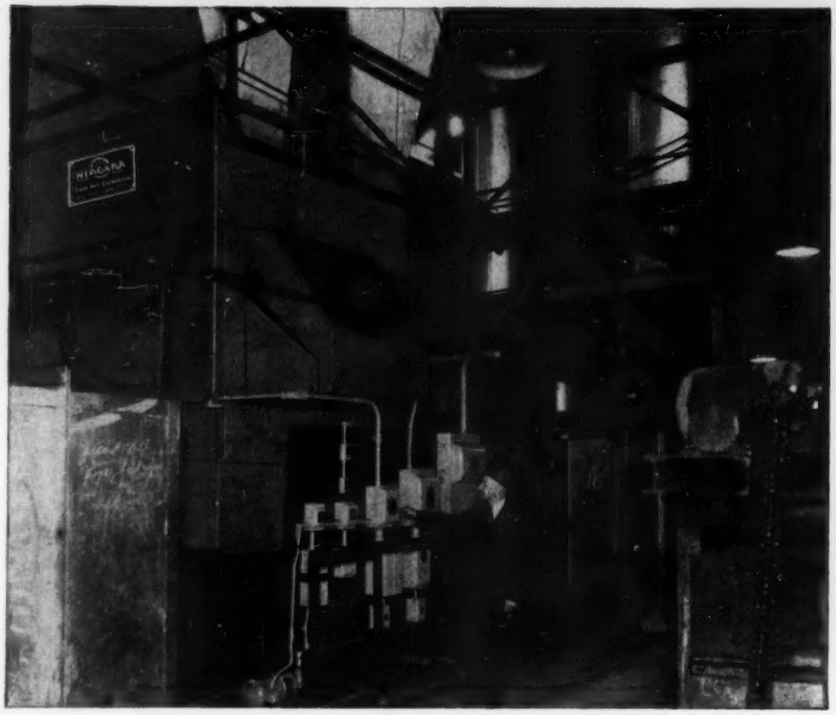
Cincinnati Hypro Planer Type Milling Machine



G. & L. Vertical Plastics Injection Press

DAVIS

Complete Tooling Service



Uniformly Better Results in Heat Treating...

● Using the NIAGARA AERO HEAT EXCHANGER to cool quenching bath solutions returns the cost of the equipment quickly and gives a bonus in fewer troubles for the heat treating superintendent.

Controlling the temperature of the quench means a uniform product...fewer rejections. Ample cooling capacity independent of water supply eliminates shut-downs because of hot oil. The heat is transferred from the oil to air by the evaporation of a water spray. Only the water evaporated is used and 95% of the water cost is saved.

In hundreds of installations, quenching both small parts and large shapes, production has increased at lower cost. Units operate reliably for years without maintenance troubles in plants that run 24 hours per day.

Niagara Aero Heat Exchangers also give extra value in cooling jacket water for process equipment or engines, hydraulic equipment, electronic sets, controlled atmosphere processes, and many other applications.

Write for Bulletin No. 96

NIAGARA BLOWER COMPANY

Over 30 Years Service in Industrial Air Engineering

405 Lexington Ave. Dept. S New York 17, N. Y.

District Engineers in Principal Cities

INDUSTRIAL COOLING HEATING • DRYING

NIAGARA

HUMIDIFYING • AIR ENGINEERING EQUIPMENT

LETTERS
TO THE EDITORS

Help for Small Business

In your Nov. 13 issue of STEEL you advise consulting National Production Authority, Small Business Division, for assistance in procuring steel. We tried this and here in an excerpt from the letter in reply is the results we had:

" . . . we are sorry to inform you that, regardless of some erroneous publicity to the effect that the Department of Commerce would assist industry in procuring tight materials, there has been no arrangement made officially for this purpose. Suppliers have assured the NPA that they were able and willing to take care of the needs of industry and, as a result, the only priority assistance possible is that which can be obtained through defense agencies for the implementation of their contracts."

Wm. V. Heinz, Engineers and Manufacturers, La Salle, Ill.

● *Through an apparent misunderstanding, some field offices of the NPA have refused to give aid to small businesses unable to obtain steel and other materials. All is now straightened out, as noted in* STEEL, *Dec. 11, p. 61.*

Estimating Costs

I would very much appreciate learning where I might obtain a text or paper of recent vintage, setting forth methods of estimating costs for structural steel in place.

D. D. Henderson
Topeka, Kan.

● *We suggest contacting the American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y.*

Let Freedom Ring!

May I express my personal congratulations on the excellent editorial, "A Great Day for Freedom", which appeared in your Nov. 13 issue. More editors should express the truth as you have, and your views of the news are most commendable and appreciated.

R. C. Ingersoll, President
Borg-Warner Corp., Chicago, Ill.

Re: Twenty Years After

●*Reader C. E. Smart, president, W. & L. E. Gurley Co., Troy, N. Y., forwards the accompanying photo of his 1930 Marquette sports sedan parked alongside his 1950 Chevrolet sport cabriolet to show the evolutionary changes which 20 years have brought in motor cars (see Letters, Aug. 14, 1950, p. 8). To reader (and farmer) Smart thanks and congratulations on a well-preserved "clunker."*

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 127 NO. 25 DECEMBER 18, 1950

EDITORIAL STAFF

Editor-in-Chief ..... E. L. SHANER
Editor ..... IRWIN H. SUCH
Managing Editor ..... WALTER J. CAMPBELL
Market Editor ..... WM. M. ROONEY
Engineering Editor ..... JAY DEEULIS
Steel Plant Editor ..... J. D. KNOX
Machine Tool Editor ..... GUY HUBBARD
Consulting Editor ..... ALLEN G. GRAY
Art Editor ..... DON S. CADOT

Associate Editors:

A. H. ALLEN, WALTER TOERGE
VANCE BELL, FRANK R. BRIGGS
DAN REEBEL, JOHN S. MORGAN

Assistant Editors:

HENRY J. HOLTZ, DOLORES K. MAILLE
EDWIN L. KARPICK, L. J. SKUDERIN
EDWARD C. BIRKNER, M. T. BORGERHOFF

Resident Editors:

Washington ..... E. C. KREUTZBERG
New York ..... B. K. PRICE, L. E. BROWNE
Pittsburgh ..... J. C. SULLIVAN
Detroit ..... H. C. TUTTLE
Chicago ..... E. F. ROSS
London, European Editor, VINCENT DELPORT

Editorial Correspondents:

Birmingham ..... R. W. KINCEY
Buffalo ..... L. C. FELDMANN
Cincinnati ..... SAMUEL S. CARR
St. Louis ..... MAC L. HUTCHENS
Youngstown ..... GEORGE R. REISS
Los Angeles ..... NORMAN LYNN
San Francisco ..... EDWARD HAVERTY
Seattle ..... R. C. HILL
Dallas ..... C. K. CATES
Toronto ..... F. S. TOBIN
Birmingham, Eng. ..... J. A. HORTON
Paris, France ..... LEON JAUDOIN
Liege, Belgium ..... JACQUES FOULON
Dusseldorf, Germany ..... HERBERT GROSS

BUSINESS STAFF

Business Manager ..... J. W. ZUBER

Advertising:

Service Manager ..... C. H. BAILEY
Production Manager ..... A. V. ANDERSON
New York ..... E. W. KREUTZBERG
K. A. ZOLLNER, CALVIN FISHER, JR.
Pittsburgh ..... S. H. JASPER, B. C. SNELL
Chicago ..... L. C. PELOTT
Cleveland ..... D. C. KIEFER
H. G. ROWLAND, W. L. POLAND
Los Angeles ..... F. J. FULLER

Circulation Department:

Manager ..... G. R. EBERSOLE
Readers' Service ..... E. L. FRANKE

Circulation Representatives:

Manager ..... D. G. HEWITT
H. R. DUNNE, C. A. PRICE

Main Office:

Penton Building, Cleveland 13, Ohio
Main 1-8260

Branch Offices:

New York 17 ..... 60 East 42nd St.
Murray Hill 2-2581
Chicago 11 ..... 520 North Michigan Ave.
Whitehall 4-1234
Pittsburgh 19 ..... 2837 Koppers Bldg.
Atlantic 1-3211
Detroit 2 ..... 6560 Cass Ave.
Trinity 5-3024
Washington 4 ..... 1123 National Press Bldg.
Executive 6849
Los Angeles 4 ..... 130 N. New Hampshire Ave.
Dunkirk 2-1758
London, 2 Caxton St., Westminster, S.W. 1

Published by

THE PENTON PUBLISHING COMPANY

Chairman ..... E. L. SHANER
President and Treasurer ..... G. O. HAYS
Vice Pres., Director of Adv. R. C. JAENKE
Vice Pres. and Secretary F. G. STEINEBACH
Assistant Treasurer ..... R. W. COLEMAN

Also publisher of

THE FOUNDRY • MACHINE DESIGN
NEW EQUIPMENT DIGEST

Member, Controlled Circulation Audit, Inc., and National Publishers' Association. Published every Monday. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Single copies (current issues) 35c. Metalworking Yearbook issue $2.00.

Copyright 1950 by the Penton Publishing Co.

NEWS

★ Letters to the Editors 8
★ As the Editor Views the News 59
★ News Summary 63
Here Comes Your Steel Expansion 65
Storms Drop Ingot Output Estimate to 96.5 Million Tons 67
Defense Outlines DO Plan 68
Reshuffle in National Production Authority 68
Cadillac Cleveland Tank Plant Converting Fast 69
Bendix Buys Victor Plant 70
★ Windows of Washington 72
Britain Set "To Take Over." Germany Sights Economic Freedom 76
★ Mirrors of Motordom 79
★ The Business Trend 82
★ Men of Industry 86
★ Obituaries 91

PRODUCTION-ENGINEERING

★ Production and Engineering News at a Glance 93
Contour Forming Speeds Bus Body Fabrication 94
★ Seen and Heard in the Machinery Field 97
Jet Engine Parts Studied at New GE Laboratory 98
Fast Abrasive Belt Finishing Lops Off Costs—Conclusion 100
Insulation of Roll Ends Cuts Power Costs 104
No Transmission, No Clutch on Construction Equipment 112
★ Progress in Steelmaking—Open Hearth Charging Time Cut 55% 114
★ Calendar of Meetings 128
★ New Products and Equipment 131
★ Helpful Literature 139

MARKETS

★ Market Summary 141
★ Metal Prices and Composites 142
Metal Price Controls Expected 148
★ Metalworking Briefs 167

★ *Denotes regular features*

Advertising Index—Page 172. Editorial Index available semiannually; STEEL also is indexed regularly by Engineering Index Inc., 29 West 39th St., New York 18

Next Week . . . **Birthmarking Alloy Steels Would Save Time and Material . . . Wraps Taken Off Low-Power Nuclear Reactors . . . Transformers Mass-Produced by Resistance Welding . . . Interest in Continuous Steel Casting Gains Momentum.**

The Purchasing Agents of America . . . .

The Men of the Year for 1950

RELIANCE *Job-Fitted* **PRODUCTS AND SERVICES**

COLD ROLLED STRIP STEEL

Coils . . . Cut Lengths . . . All Tempers
Slit, Sheared, Deburred
and Round Edge
From WAREHOUSE
or
DIRECT-FROM-MILL

SHEETS

Cold Rolled . . . Hot Rolled
Hot Rolled Pickled . . . Long Terne
Galvanized
Standard or production sizes
or cut to actual working
dimensions
from
WAREHOUSE STOCKS

Whereas, during 1950, they kept their plants turning out civilian goods at the highest rate in our economic history, and

Whereas, they achieved this by their initiative, energy and resourcefulness, in the face of shortages in practically all "hard" commodities

Therefore be it resolved that the Purchasing Agents of America be nominated as The Men of the Year for 1950.

To make this accomplishment possible, all basic industry cooperated. Steel makers, for example, produced more steel than in any comparable period. Steel warehousemen supplied unprecedented tonnages of "spot" steel to enable business, especially small business, to turn out the goods.

We at Reliance are grateful for the opportunity of working with so many of the Purchasing Agents of America. We will continue in 1951 to help them to the limit of our capacity.

DEPENDABLE DAN
OUR CUSTOMERS' MAN

The Season's Greetings
—— to All of You ——

For Immediate Action Call The Nearest Reliance Plant or Office:

DETROIT STEEL CORPORATION

PRODUCERS OF
Coke and Coal Chemicals • Pig Iron • Ingots
Slabs • Sheet Bars • Billets • Wire Rods
Manufacturers' Wire • Merchant Wire Products
Welded Fabric • Cold Rolled Strip Steel

GENERAL OFFICES
DETROIT 9, MICHIGAN

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS

CLEVELAND PLANT, 3344 E. 80th St., VUlcan 3-3600, Cleveland 4, O.
DETROIT PLANT, 13770 Joy Road, WEbster 3-5866, Detroit 28; Mich.
EASTERN PLANT, State & Edmund Sts. (Hamden), New Haven 7-5781, New Haven 7, Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES

DAVENPORT, IOWA, 828 Davenport Bank Bldg., Phone 3-7290
DETROIT 28, MICH., 13770 Joy Road, WEbster 3-5866
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-9569
INDIANAPOLIS 4, IND., 1498 Fletcher Trust Bldg., FRanklin 3429
JACKSON 18, MICH., 801 Reynolds Bldg., JAckson 3-3258
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ST. LOUIS 8, MO., 4053 Lindell Blvd., LUcas 4550
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8384
WORCESTER 8, MASS., 339 Main St., WOrcester 5-8686

COPYRIGHT 1950 D.S.C.

December 18, 1950

"We'll Do It"

As this is being written, word comes from Washington that the President is likely to proclaim a national emergency and to seek many additional powers. In conferences with many key members of both parties in House and Senate on Wednesday and Thursday of last week, he discussed all phases of a new plan of economic mobilization.

This decision to work more closely with members of Congress is heartening. One of the troubles that has been noticeable since the beginning of the Korean war last June is that Mr. Truman and his advisors have attempted to retain too much of the management of government during the crisis within the family of Truman political henchmen.

This has been particularly true in the relations of government with industry. At the very outset of the Korean mess, President Truman stated clearly that the details of mobilization for defense would be handled as far as possible within the framework of existing government departments. Commerce would do this, Labor would do that, Interior would handle something else and Agriculture would attend to still another phase of preparedness. Obviously he did not want a super over-all agency headed by somebody outside of the executive family.

The effort to solve the problems of crisis by cabinet personnel has failed dismally. It has failed because most of the cabinet members and their aids do not like and do not understand industry. Also their staffs are loaded with thousands of persons who think more about the petty mechanics of how a job can be done than about doing the job quickly and satisfactorily.

In the new plan for mobilization which the President and members of Congress are preparing, it is to be hoped that adequate provision will be made for placing the ablest persons in the most important positions. The administration's aversion to businessmen must be shelved for the duration.

The critical situation calls for the organization of a crew of non-government, non-bureaucratic go-getters who know how to get things done. A lot of governmental apostles of the dogma that "it can't be done" must make way for uninhibited zealots of private industry whose motto will be: "It sounds impossible, but we'll do it!"

* * *

NAIVE OR CALCULATED? It would be interesting to know just what line of reasoning prompted Economic Stabilization Administrator Alan J. Valentine to wire General Motors and Ford Motor asking them to rescind price increases on automobiles which they had announced two days earlier. Obviously Mr. Valentine's objective was to plant a road block in front of inflationary forces, but by what process of reasoning did he think that action by the two major automobile companies would be effective?

Ever since the spectacular stock market crash in 1929 there have been numerous occasions when a number of large corporations voluntarily and without prompting by government have attempted to stem a dangerous national trend. In each case the effort has been futile because the action of the few has not been strong enough to arrest the momentum of the many.

Today the price situation is far beyond remedy by any action by GM or Ford, or by U. S. Steel or by 20 of the nation's largest corporations. The principal spur to price advances has come from reckless government spending for

(OVER)

non-essentials and from the government's ill-concealed signal to union leaders to push for liberal wage increases and fringe benefits before emergency controls would have to be imposed.

The telegrams to GM and Ford were either naive or they were prompted by a calculated political decision to cater to the propaganda line of union leaders. —p. 79

* * *

NEW PIONEERING ERA: Recent and current developments in military aviation constantly are imposing new problems upon the public and private laboratories of the nation. Langley Aeronautical Laboratory of NACA is concerned about the physical characteristics of some light metals at elevated temperatures in primary aircraft structures in flights at supersonic speeds. Unless means of preventing high skin temperatures can be developed, the principle of the stressed-skin aircraft structure may be in jeopardy.

Jet-propelled aircraft are calling for more reliable information as to what happens to the components of engines when they are subjected to conditions prevalent at altitudes of 70,000 feet and temperatures of 100° F below zero. General Electric's new aircraft gas turbine laboratory has a 40-foot insulated and pressurized steel cylinder in which these conditions of altitude and temperature can be simulated.

The search for knowledge as to how metals behave under new and strange circumstances has just begun. —pp. 93, 98

* * *

CHASSIS-LESS BUSSES: In World War II aircraft and automobile manufacturers were brought together on many big war jobs and each group learned something from the other. An interesting follow-through on this interchange of experience is found in the adaptation by Marmon-Herrington, General Motors and Oneida Products of aircraft fabrication techniques to bus and coach body building.

Side posts, roof columns, wheelhouse angles, carlines, window posts and rub rails are being shaped on rotary contour formers in much the same way that airplane wing and fuselage sections are shaped. In the case of Marmon-Herrington, rotary contour forming methods seem to make possible complete elimination of the orthodox chassis. On 349 passenger trolley coaches recently ordered by the Chicago Transit Authority, elimination of the heavy chassis will reduce the weight of each coach 2½ tons, equivalent to the weight of about 33 passengers. The new coaches will weigh less with an average load of passengers than most prewar coaches weighed when empty. —p. 94

* * *

O. K. RAPID WRITE-OFF: National Security Resources Board has issued certificates of necessity providing for rapid amortization of plant and equipment to 18 steel companies covering facilities that will increase the capacity of steel ingots by 5.5 million tons, of coke by 2.5 million tons and of pig iron by 2.75 million tons.

These certificates are in addition to that issued two weeks ago to Jones & Laughlin Steel. To date the certificates cover about 7 million tons of new ingot capacity. Action is expected to be taken on other projected plant expansion plans at later dates.

The money value of equipment approved for rapid amortization now totals $613 million. This is substantially below the total cost of the expansion projects involved because in some instances only portions of the new facilities are eligible for accelerated depreciation. Included in the latest issuance of certificates are several to refractory manufacturers covering expansion in plant and equipment. —p. 65

* * *

TANGIBLE PROGRESS: At a time when most of the talk about preparedness centers about things we plan to do in the future, it is refreshing to be able to feast one's eyes on tangible progress toward actual production. Such progress is visible in the onetime Fisher bomber plant in Cleveland where Cadillac Motor is installing equipment for the manufacture of light tanks.

About 20 per cent of the machine tools and equipment required for the job already is in place on the 28-acre main floor. Rehabilitation of the building is about completed. Currently about 1700 employees are at work. When all equipment is in place and actual production of tanks begins the working force will consist of about 5000 employees.

It takes a long time to prepare and equip a plant of this magnitude for actual production. It is a pity that so few of our preparedness jobs are as far along as Cadillac's. —p. 69

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

NO NEWS—President Truman last Friday made official what industry already knew: We're headed for full mobilization (p. 65). Eventually to evolve will be widespread controls on prices, wages and materials distribution. Already developed is a steel expansion program spurred by NSRB's approval for five-year tax amortization of capital programs for 19 steel companies. One program, for Jones & Laughlin, got the nod on fast write-off a while ago; 18 more were approved last week.

CAPACITY BOOST—The 18 expansions will boost ingot capacity by 5.5 million tons, coke capacity by 2.5 million tons and pig iron capacity by 2.75 million tons (p. 65). Add the J & L program to the other 18, and you can expect an ingot capacity increase of 7 million tons. What's more, other steel companies—notably U. S. Steel—have programs not included in those amortization approvals. Three refractory companies also will be permitted fast tax write-offs. Major steel programs among the 18 approved include the $164.5 million project for Armco and Sheffield, $86.1 million in expansions for Youngstown Sheet & Tube and the $73.4 million proposal for Lone Star.

UP AND UP—The steel expansions are one reason why American industry's capital expenditures will reach a record high in 1951, probably about $21.6 billion (p. 85). In 1950, the expenditures will equal the 1949 level when $18.1 billion was spent. At the start of this year, capital expansions lagged, but they have bounded back to $10.1 billion in this second six months, 12 per cent more than in the second half of 1949.

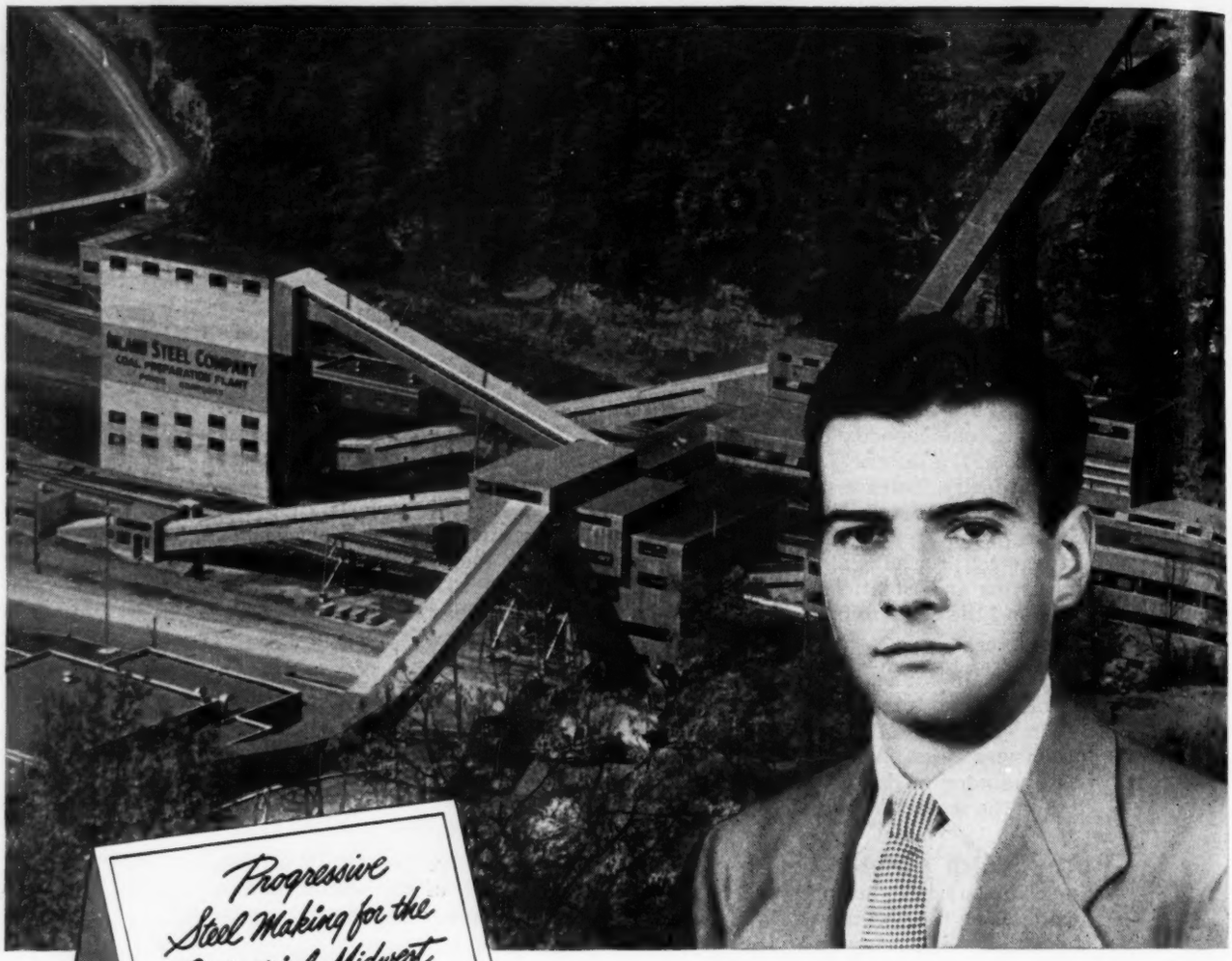
DOWN AND DOWN—Industry's expansions are one more proof to Washington observers that business and the public are far ahead of the administration in preparing to meet the world crisis (p. 72). The atmosphere around the capitol is as somber as a rainy December day.

BY THE NUMBERS—The Defense Department has outlined its complete DO (Defense Order) plan (p. 68). Two-digit code numbers refer to procurement groups. No one group, even if its number is lower than another's, has priority over any other classification. If you get an order with a DO number, but cannot fill it without receiving priority on materials to honor the contract, you may extend the original DO code to your own orders.

PRICE SKIRMISH—General Motors' and Ford's polite "no" to the federal request to rescind price increases may mean an early death blow to any voluntary price program. Automotive people say it's unrealistic to begin a price stabilization effort against end-product producers (p. 79). They point out that the day before the price stabilization request the government itself has raised the price of synthetic rubber 12 per cent on one grade and 32 per cent on another.

PARADOX—As the British government prepares to take over the steel industry Feb. 15, more economic freedom is seen for West German industry (pp. 76-77). Despite nationalization, British industry is slowly increasing its production. It can sell all it makes, and the dollar gap is narrowing. The Korean war has given West Germany a new role in the international situation. That means that economic and political controls are dropping off one by one.

HERE AND THERE IN INDUSTRY—Bendix Aviation Corp. bought the property and facilities of Victor Animatograph Corp. (p. 70) to handle the increased production of aircraft instruments and accessories . . . Cleveland Tank Plant, Cadillac Motor Car Division of GM, is rapidly getting the sprawling 28-acre former Fisher bomber plant ready for turning out light tanks (p. 69) . . . If industrial areas were covered continuously by heavy clouds, they'd be smog free, says Dr. Haagen-Smit of CalTech (p. 75). He believes the sun is the culprit in the formation of smog . . .Factory workers were hired at a rapid rate in October (p. 84); Bureau of Labor Statistics says the accession rate was 53 per 1000 workers.



"WE GIVE OUR COAL A BATH

to improve our steel!"

"I'm Dick Jimenez, Preparation Engineer at Inland's new coal preparation plant in Price, Kentucky. Our job here is to provide a clean, uniform grade of coal with a low ash content for the Inland coke ovens. Poor coal... coal with varying degrees of slate mixed in... results in inefficient and undependable blast furnace operation. And today it's more important than ever that those blast furnaces be as productive as possible."

This coal preparation plant was recently put into operation as part of Inland's continuing program of modernization and expansion. This constant improvement of every phase of steelmaking is further evidence that Midwest steel users can put their confidence in Inland as a progressive and dependable source of steel in peace and war.

INLAND

Products: Sheets, Strips, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories, Coal Chemicals.

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul

UNIVERSITY OF MICHIGAN LIBRARIES

STEEL
A PENTON PUBLICATION

Here Comes Your Steel Expansion

Seven million tons of ingot capacity covered in program approved for fast tax write-offs as emergency program shifts into higher gear. More Programs coming

MORE STEEL for the long and arduous war program that lies ahead received the government's nod of encouragement last week. Certificates of necessity for fast tax write-offs were issued to 18 steel companies for expansion programs to provide more than 5.5 million tons of steel ingot, 2.5 million tons of coke and 2.75 million tons of pig iron.

The expansion programs were planned by the steel producers many months ago. Work on some is underway. Many have been held up pending government action on applications for accelerated amortization.

This Is It—The action came as the whole economy was preparing to shift to an emergency basis that will bring strict controls over materials, prices, wages. Mobilization will become much faster. Defense spending will rise sharply. Manpower and materials for civilian goods production will become tighter. End use limitations are inevitable.

The new emergency program soon will bring large expansions in metalworking plants, particularly in new plants designed to produce tanks, aircraft and direct war materiel. Some of these, of course, already are underway. But military necessity will dictate many more.

But Not All—Necessity certificates were granted to 18 companies last week. Earlier, a large expansion program for Jones & Laughlin was approved. The total approved steel expansion program, under the fast tax-write-off program, includes 7 million tons of ingot capacity. Some of the largest producers, including United States Steel, have huge expansion programs that are not included in this listing.

A preliminary check of the projected expansion program indicates the total may exceed the 9.4 million tons promised by the end of 1952.

Refractories, Too—Three refractories companies also were granted certificates totaling $22 million. General Refractories Co. got a certificate for $8,453,703 for expansions at Joliet, Ill.; Stevens Pottery, Ga.; Warren, O.; Sproul, Pa.; Baltimore; Olive Hill, Ky.; Claysburg, Pa.; Rockdale, Ill.; and Los Angeles.

Harbison-Walker was granted certificates for $12,149,451 for programs at Bessemer, Ala.; Windham, O.; East Chicago, Ind.; Fulton, Mo.; Baltimore; and Mt. Union, Pa.

Mexico Refractories Co. was listed for a $1,409,950 expansion at Mexico, Mo.

Who, How Much, Where—Steel expansion certificates were issued to these companies:

Armco Steel Corp., and Sheffield Steel Corp. $164,492,406, at Ashland, Ky.; Zanesville, O.; Middletown, O.; Houston, Tex., and Kansas City, Mo.

Youngstown Sheet & Tube Co., $86,095,000 at East Chicago, Ind.

Lone Star Steel Co., $73,425,200 at Lone Star, Tex.

Great Lakes Steel Corp., $42,833,800 at River Rouge, Mich. Crucible Steel Co. of America, $26,124,144, at Midland, Pa.

Republic Steel Corp., $15,955,000 at Birmingham, Ala.; Cleveland; Alabama City, Ala.; and South Chicago, Ill.

Northwest Steel & Wire Co., $14,507,000 at Sterling, Ill.

Empire Steel Co., $9,550,000 at Mansfield, O.

Green River Steel Corp., $8,001,032 at Owensboro, Ky.

Weirton Steel Co., $7,078,425 at Weirton, W. Va.

Woodward Iron Co., $4,500,000 at Woodward, Ala.

Hazelton Steel & Tubing Co., $4,275,340 at Hazelton, Pa.

West Virginia Steel & Mfg. Co., $3,014,352 at Huntington, W. Va.

Sharon Tube Co., $2,333,532 at Sharon, Pa.

McLouth Steel Corp., $2,294,442 at Trenton, Mich.

Keystone Steel & Wire Co., $1,500,000 at Peoria, Ill.

Connors Steel Co., $1,286,970 at Birmingham, Ala.

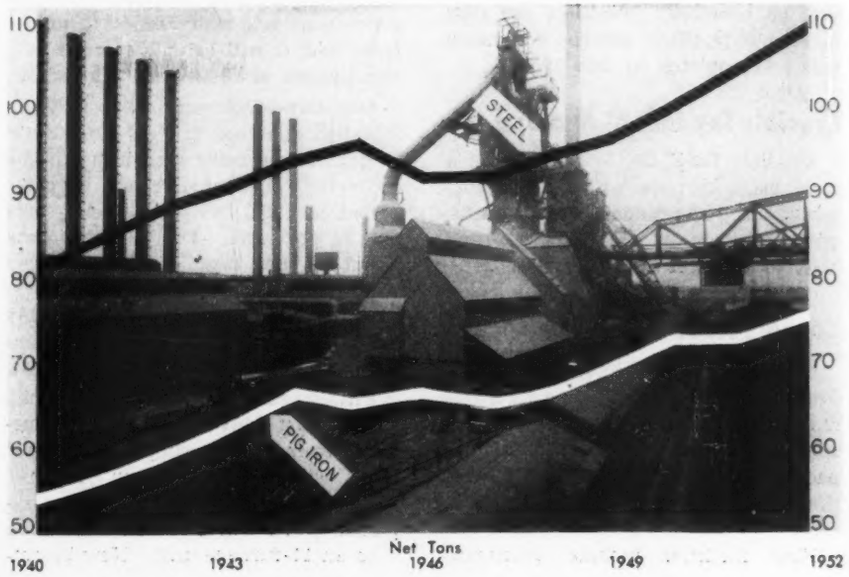
Not All the Cost—The figures on which rapid amortization was granted do not cover the whole cost of the expansion programs to the companies. The expansions for which certificates have been granted now exceed $600 million, but the total cost to the industry will be much greater.

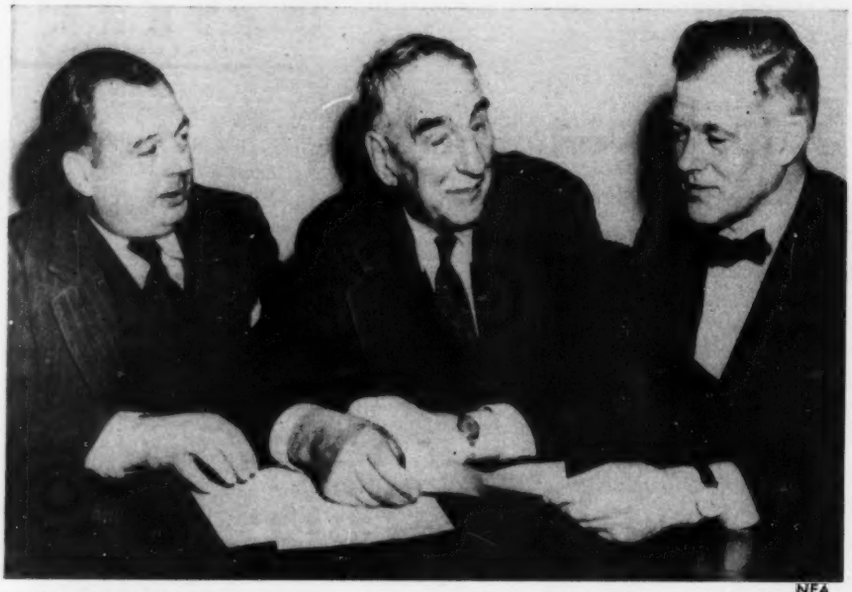
The certificates are granted under the Internal Revenue Act of 1950 which permits depreciation for tax purposes of plants built for defense purposes at a much faster than normal rate. Companies seeking the tax benefit (STEEL, Dec. 11, p. 62) submit applications to the NSRB for judging primarily on the basis of how much the expansion will aid the emergency program. Applications may be granted in full, in part or rejected.

Steel, Pipe Mill for Lone Star

Lone Star Steel Co., Lone Star, Tex., received a necessity certificate for $73.5 million. Company is awaiting a Reconstruction Finance Corp. loan to start an expansion program

Steel, Pig Iron Capacities—How They Grow





NEA

CONTROL PANEL: The big guns in the controls picture shown at a press conference are Michael V. DiSalle, who is price controller; Cyrus S. Ching, wage stabilizer, and Dr. Alan Valentine, economic stabilizer, who is head of the group

which will provide 500,000 tons of ingot capacity and 350,000 tons of electric weld pipe.

New facilities will include four rolling mills, electric forming and welding equipment sufficient to make oil field tubular goods from 3-inch to 16-inch, casing and line pipe. E. B. Germany, president, estimates ingot production could start in nine months, plate production in 14 months, if a sufficiently high priority is granted.

McLouth to Top Charging

McLouth will expand steelmaking capacity by about 140,000 tons by converting its four electric furnaces to top charging. Company's ingot capacity now is 420,000 tons. To accommodate greater ingot production, two new soaking pits will be constructed. More hot coil storage space will be provided. Footings are now being put in place and the expansion will be completed by mid-1951.

Crucible Expands at Midland

Crucible Steel Co. is considering a new blast furnace at Midland, Pa., additional by-product coke ovens, reconstruction of open hearths and electric furnaces and a new bar mill.

Connors Adds Electric Furnaces

Conners Steel Co., Division of H. K. Porter Co. Inc., is expanding its steelmaking facilities at Birmingham, Ala., by 40 per cent. Present capacity is 94,000 tons. The expansion will raise this to about 130,000 tons.

New facilities include additional electric furnace capacity, a breakdown mill, a heating furnace and increased finishing capacity. New facilities will cost $2 million.

J&L's Score on Expansion

Another major steel expansion program to be spurred by fast amortization is Jones & Laughlin Steel Corp. J & L got the first certificates of necessity approved by National Security Resources Board.

The company now has annual ingot capacity of about 4,850,000 tons. A little more than a year hence that will be increased by 32 per cent to about 6.4 million tons. Fast amortization has been approved on more than half of the cost of that boost. By the end of 1951, J & L will have spent $347 million for improvements at Pittsburgh and Aliquippa, Pa., in a five-year program. Some 14 months from now it will complete a $28 million project at Cleveland. The score:

Iron Ore—New equipment is being installed at mines in New York state to get nonmagnetic ores, hitherto not recovered. The project will be completed in 1952 and will increase output 30 per cent. J & L today gets about 17 per cent of its ore from New York state. Other ore properties will also be developed, notably the underground Tracy Mine in Michigan, scheduled for production in 1954.

Pittsburgh Works—J & L broke ground last May for a new six-furnace open-hearth shop. The first steel will be poured in August, 1951. Before the shop is even completed, work will start on expanding it to an 11-furnace unit. New blooming and bar mills will be built to roll the steel from the added open hearths. Most of those projects will be completed in late 1951. The 11-furnace shop will have an annual ingot capacity of about 1,980,000 tons and will boost the Pittsburgh capacity by 1.2 million tons.

Aliquippa Works—Various new finishing facilities at Aliquippa will boost J & L's capacity for producing tin mill products by 50 per cent. New rod and round mills are also being built. A new battery of 59 coke ovens will be ready to produce coke early in 1951.

Otis Works—By early 1952 the company will have increased its ingot capacity at the Cleveland plant by 360,000 tons a year. The expansion will require two additional open hearths in line with the present nine furnaces and replacement of a 650-ton blast furnace with a larger facility. The entire $28 million program at the Otis Works will be paid for by a loan from General Motors Corp. who will be repayed in steel products at the rate of 240,000 tons a year.

Carnegie-Illinois Boosts Output

Carnegie-Illinois Steel Corp.'s Ohio Works, Youngstown, boosted its open-hearth steel capacity about 160,000 tons—10 per cent. The boost in capacity at Ohio's biggest steel plant was accomplished by improving techniques and facilities instead of adding new units.

The plant's open-hearth capacity is raised to about 1.7 million tons. Its big bessemer plant has an annual capacity of 745,000 tons which brings the total capacity of the Ohio Works to 2,445,000 tons of ingots annually.

The plant's 15 open hearths will have an increased output of about 20 tons per heat.

The plant put into effect new bonus pay rates for open-hearth crews to compensate for the increased capacity, but the men walked out in protests leaving the furnaces untapped. Supervisory personnel helped tap the furnaces.

Armco's Program Extensive

Expansion plans by Armo Steel Corp. and its subsidiary, Sheffield Steel Corp., include two new blast furnaces, one at Middletown, announced earlier, and one at Houston, for which financial arrangements have not yet been made.

At Middletown, Armco is building new coke ovens and new open hearths. Middletown expansion will cost about $49 million.

At Ashland, Ky., it will install a

72-inch hot strip mill, at a cost of about $32 million. At Zanesville, O., about $1.4 million will be spent for a new production line for electrical steels.

At Houston, a new 75-ton electric furnace is being built. Houston also is getting a new plate mill and other facilities. Plans for a new blast furnace and additional steel capacity are tentative. At Kansas City, Mo., steel capacity will be increased. An average of about 75 per cent of Armco's and Sheffield's $165 million program will be subject to fast amortization.

National Builds Bigger Units

National Steel Corp. will add 500,000 tons to its annual ingot capacity to raise its total to 5,200,000 tons. Expansion is scheduled for completion early in 1952.

Great Lakes Steel Corp., a unit of National, is building a new blast furnace at Zug Island to provide 480,000 tons additional pig iron capacity. Freyn Engineering has the contract. New unit calls for high top pressure operation with approximately five times the normal gas pressure at the stack's top.

Coke plant at Zug Island will be expanded to meet increased requirements of the company's four blast furnaces.

Eight of Great Lakes 17 open hearths will be rebuilt to double present capacity. This will give the company nine 500-ton furnaces and eight 250-ton units.

Weirton Steel is building larger open hearths. Blast furnace capacity is being increased in existing stacks.

Continuous Casting Units Ordered

Two machines for the continuous casting of semifinished steel sections have been ordered by Allegheny Ludlum Steel Corp.

The units will be built by Rossi Continuous Casting Co., New York, according to Irving Rossi in his talk before the Electric Furnace Committee, AIME, in a Pittsburgh meeting. One machine will be installed at Watervliet, N. Y., and the other at Brackenridge, Pa. Allegheny already has one unit, at Watervliet, that is continuously casting steel at the rate of 10 to 15 tons an hour. Mr. Rossi has a new theory on the solidification of metal and, with a new mold, expects to cast steel at the rate of 50 to 60 tons an hour.

Six proposals for the Rossi-type continuous casting machine also have been submitted to other steel firms.

Steel Industry at Start of Three Wars

STEEL MAKING FURNACES	World War I	World War II	Korean War
Number	973	1,180	1,216
Annual Capacity, tons	55,567,000	88,570,000	100,563,000
Daily Output, tons*	152,000	242,600	275,220
BLAST FURNACES			
Number	973	238	248
Annual Capacity, tons	51,368,000	60,394,000	71,622,000
Daily Output, tons*	140,730	165,460	196,220

*Daily output based on full capacity operations, 365 days a year

Lake Ore Deliveries Slip

Great Lakes ore shipments hit 78.2 million gross tons in 1950, nearly 2 million tons less than the carriers had hoped to bring down during the season. Bad weather at the end of November and the beginning of December forced them to fall short of their 80-million ton target.

The 1950 lake shipping season, now over, is still better than the 1949 when 69.6 million tons were shipped. More than 82.9 million tons came down the lakes in 1948. Vessel operators were hampered by weather at both the beginning and end of the 1950 season, for they were about a month late getting started last spring.

Ore supplies by next Apr. 1 will be an estimated 13 million tons, 1 million tons less than last May 1 when lake ore shipments began arriving. The ore situation by next April will be tight, but not tragically so if ore carriers can get a normal start.

Cadmium Plans Discussed

Temporary plans to provide some cadmium immediately for certain highly essential non-defense uses and plans for a longer-range program to stretch supplies were discussed last week in a meeting of the Cadmium Industry Advisory Committee and National Production Authority officials last week. Both the committee and NPA officials agree an industry order should be developed which would: 1. Establish cadmium inventory controls and 2. set up a specific list of permitted cadium usage. Such a list of permitted usage was in effect during World War II.

Storm Lowers Ingot Output Estimate to 96.5 Million Tons

THE big snowstorm that paralyzed several midwestern steelmaking centers in late November destroyed hopes for a 97-million-ton steel ingot output this year. The storm caused a loss of about 450,000 tons and causes estimates of the year's output to be revised downward to 96.5 million tons.

November ingot production was 8,007,028 tons and brought output for the first 11 months to 88,348,655 tons. November was the eighth consecutive month in which production exceeded 8 million tons, American Iron & Steel Institute production figures (see table) show.

The 11-month output represents an increase of 25.8 per cent over the corresponding production in 1949 and is within approximately 1.5 per cent of the peak annual production in 1944.

Period 1950	—Open-hearth— Net Tons	% Capac.	—Bessemer— Net Tons	% Capac.	—Electric— Net Tons	% Capac.	—Total— Net Tons	% Capac.	Calculated Net Tons Weekly	No. weeks in mo.
Jan.	7,131,519	96.5	379,252	80 6	419,601	71.9	7,930,372	93 9	1,790 152	4.43
Feb.	6,142,178	92.0	255,565	60.2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	265,726	56.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st. Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
May	7,597,837	102.8	437,006	92.9	517,044	88.6	8,551,887	101.3	1,930,449	4.43
June	7,218,570	100.9	406,944	89.3	506,001	89.5	8,131,515	99.4	1,895,458	4.29
2nd Qtr.	22,131,140	102.0	1,251,859	90.6	1,513,075	88.2	24,896,074	100.4	1,913,611	13.01
1st Half	42,152,517	97.7	2,152,402	78.3	2,801,808	82.2	47,106,727	95.5	1,820,902	25.87
July	7,220,214	96.9	380,317	79.8	470,763	78.4	8,071,294	94.7	1,826,085	4.42
Aug.	7,315,215	98.0	405,118	84 8	509,984	84.7	8,230.317	96.3	1,857,859	4.43
Sept.	7,258.961	100.7	409,216	88.7	525,017	90.3	8,193,194	99.3	1,914,298	4.28
3rd Qtr.	21,794,390	98.5	1,194,651	84.4	1,505,764	84.4	24,494,805	96.7	1,865,560	13.13
9 mos.	63,946,907	98.0	3,347,053	80.4	4,307,572	82.9	71,601,532	95.9	1,835,937	39,00
*Oct.	7,731,280	103.6	436,835	91.5	571,980	95.0	8,740,095	102.3	1,972,933	4.43
†Nov.	7,108,286	98.3	370,659	80.1	528,083	90.6	8,007,028	96.8	1,866,440	4.29

Note—The percentages of capacity operated in the first 6 months are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. Beginning July 1, 1950, the percentages of capacity operated are calculated on weekly capacities of 1,685,059 net tons open hearth, 107,806 net tons bessemer and 135,856 net tons electric ingots and steel for castings, total 1,928,721 net tons; based on annual capacities as of July 1, 1950, as follows: Open hearth 87,858,990 net tons, bessemer 5,621,000 net tons, electric 7,083,510 net tons, total 100,563,500 net tons.
* Revised. † Preliminary figures, subject to revision.

Defense Outlines DO Plan

Code numbers identify the procurement group. One group has no priority over another

IN A quandary about defense order numbers, what they mean, how they should be used? Here's the way the Department of Defense is handling its DO rating program:

Defense intends no preference or priority between program code numbers. DO-05 does not take precedence over DO-06 or any other DO program code which all contain two digits. The code number merely identifies the group into which the procurement item falls.

Extended—Manufacturers or suppliers who receive an order bearing one of the ratings DO-01 through DO-22 inclusive, or DO-99 as provided in National Production Authority's Regulation 2, may extend the rating on their own purchase orders to obtain production materials to be physically incorporated in the procurement items or to replace inventories expended for that purpose. The extension is accomplished by entering this certification on purchase orders: Certified under NPA Regulation 2, DO-(insert two digit program code number appearing on purchase order you receive from your customer).

The DO-98 rating cannot be used on purchase orders by private manufacturers to procure specified items of production equipment unless its use has been approved by the military departments as necessary for production on military orders. Application for authority to use the DO-98 rating should be made to the contracting officer of the military department having the principal interest in the rated order production of the contractor or subcontractor. Application should be made on NPA Form F-2 available from any field office of the Department of Commerce or local military procurement officers.

Criteria—You have little chance of getting a DO-98 if you can't prove: That you're using your existing equipment to the fullest practical extent to perform on rated orders; that you have made reasonable efforts to obtain new or used equipment on an unrated basis.

Production equipment manufacturers who receive a DO-98 rating on an order for production equipment items may extend the rating on purchase orders for production materials to be incorporated physically in the items or to replace inventories expended for that purpose. The extension is accomplished the same way as for other DO ratings.

These are the Defense Department's program code numbers:

01 Aircraft Program
02 Guided Missile Program
03 Ships Program
04 Tank-Automotive Program
05 Weapons Program
06 Ammunition Program
07 Electronics and Communications Equipment Program
08 Fuels and Lubricants Program
09 Clothing and Equipage Program
10 Transportation Equipment Program
11 Building Supplies and Equipment for Troop Construction Program
12 Subsistence Program
21 Miscellaneous Program
22 Department of Defense Construction Program
98 Production Equipment for Private Contractors
99 Basketing Code Number for Use by Certain Persons as Provided Under SS 11.9, Regulation 2 as follows: "In the case of a manufacturer of common components or shelf items or any other person who has a number of rated orders for which he cannot place orders for minimum commercially procurable quantities of materials to fill the rated orders individually, he may place one rated order for all the materials using the identification symbol DO-99. However, the amounts so ordered may not exceed the total amount of the material required for rated orders so combined."

Reshuffle in NPA

Following a reshuffling by Administrator Harrison, industry divisions of the National Production Authority, with names, addresses and telephone extensions of division directors (the call number in all cases is STerling 9200) are:

Building Materials—John L. Haynes, 801 E St. N. W., Ext. 2334
Chemical—Joseph S. Bates, Room 2358 Temporary T Bldg., Ext. 4637
Construction Controls—James W. Follin, 801 E St. N. W., Ext. 3907
Containers & Packaging—Charles A. Lewis, 2242 Temporary T, Ext. 2166
Copper—Frank H. Hayes, 3077 Commerce Bldg., Ext. 3918
Electronics & Communications Equipment Products—Donald S. Parris, 2250 Temporary T, Ext. 2361
Forest Products—Harold E. Holman, 2007 Temporary T, Ext. 2123
General Products—Thomas W. Delahanty, 2258 Temporary T, Ext. 2132
Industrial Economics—Bradford M. Fullerton, 3818 Commerce, Ext. 3537
Inter-Agency—Lester M. Carson, 1413 Temporary T, Ext. 3104
Iron & Steel—David B. Carson, 3830A Commerce, Ext. 4456
Light Metals—Nigel H. Bell, 3061 Commerce, Ext. 4630
Machinery—William L. Beck, 2134 Temporary T, Ext. 2629
Motion Picture—Photographic Products—Nathan D. Golden, 3826 Commerce, Ext. 3717
Rubber—Earl W. Glen, 1305 Temporary T, Ext. 3135
Textile & Leather—Julius G. Schnitzor, 2208 Temporary T, Ext. 3538
Tin, Lead & Zinc—Whitman W. Hopton, 3077 Commerce, Ext. 3897
Transportation Equipment—Robert L. Glenn, 2011 Temporary T, Ext. 2955

Check DO Compliance

Is the DO rating system being abused? NPA Administrator Harrison is concerned over reports some contractors are specifying delivery dates far in advance of those required to sustain authorized production schedules, that some have placed duplicate orders with several suppliers with the intent of accepting first deliveries and cancelling the others, and that other contractors are overstating their requirements to meet rated orders. Complaints have been turned over to the new NPA Compliance Division for investigation.

In addition, John D. Small, Munitions Board chairman, has requested the Army, Navy and Air Force to be on the alert for abuses "which would cause unwarranted disruption in the flow of materials to essential civilian users."

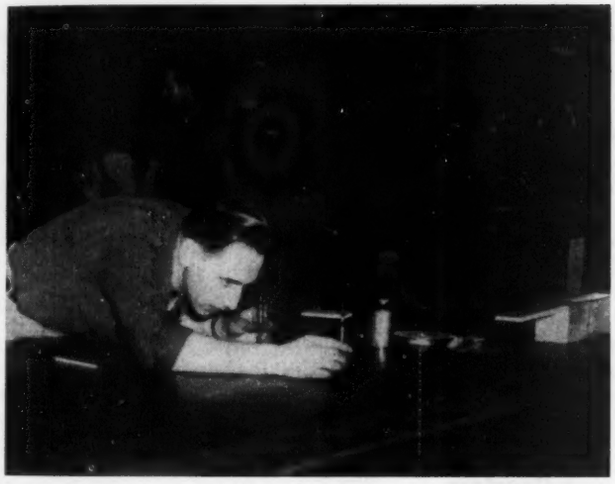
More Administrators

Administrators have been appointed for the Defense Minerals Administration and the Defense Solid Fuels Administration. Dr. James Boyd, director, Bureau of Mines, heads the former. Charles W. Connor, Charleston, W. Va., for several years in charge of coal mining operations of the Armco Steel Corp. at Montcoal, W. Va., heads the latter.

Cadillac's Cleveland Tank Plant Converting Fast

THE SPRAWLING onetime Fisher bomber plant in Cleveland is rapidly being converted into a tank arsenal. The 28-acre main floor is a mass of men and machines these days—only a month after the last of 350 carloads of Navy beans was removed. Much of the work to date has been rehabilitation of the plant itself and uncrating and setting up the machinery. There is still a lot of vacant space available as is suggested by the photograph on the right. But surplus machines are being rebuilt and inspected at the rate of ten a day. Over 150 men are on that job alone. About 20 per cent of the machinery to build light tanks is now on hand. Employment is 1700. As more machines are installed, employment will rise to a peak of about 5000; 33,000 applications came in

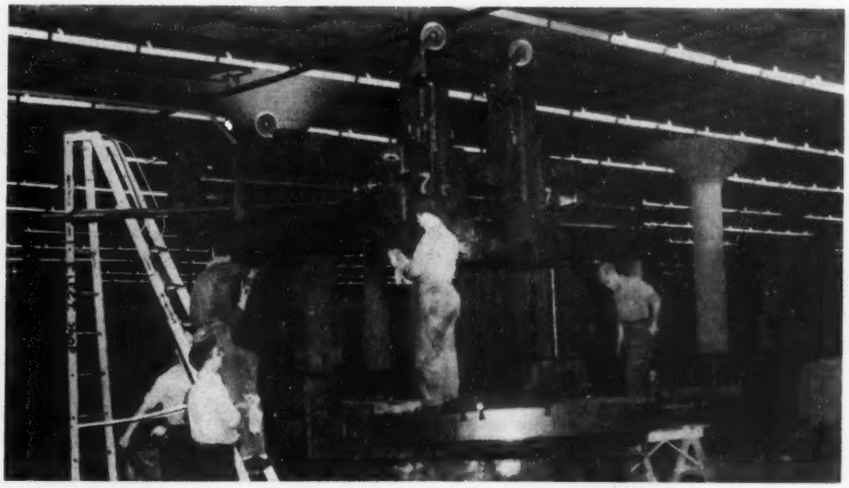
—All pictures courtesy Cleveland Press



An inspector measures hole locations for a compensating tank wheel for one of several pilot model tanks on hand. Accuracy to 1/1000th of an inch is required on the work

Workmen clean up the surplus machinery that has come in and is still coming in. All machinery is to be painted in a special combination of gray, cream and bright colors

A 30-student capacity welding school is set up to train beginners and qualified welders in armor-plate welding



This 100-inch boring mill, one of the many giant machines that are being installed, will perform operations on tank hulls. Tank production won't get underway until more machinery is installed and employment is about tripled

Bendix Buys Victor Plant

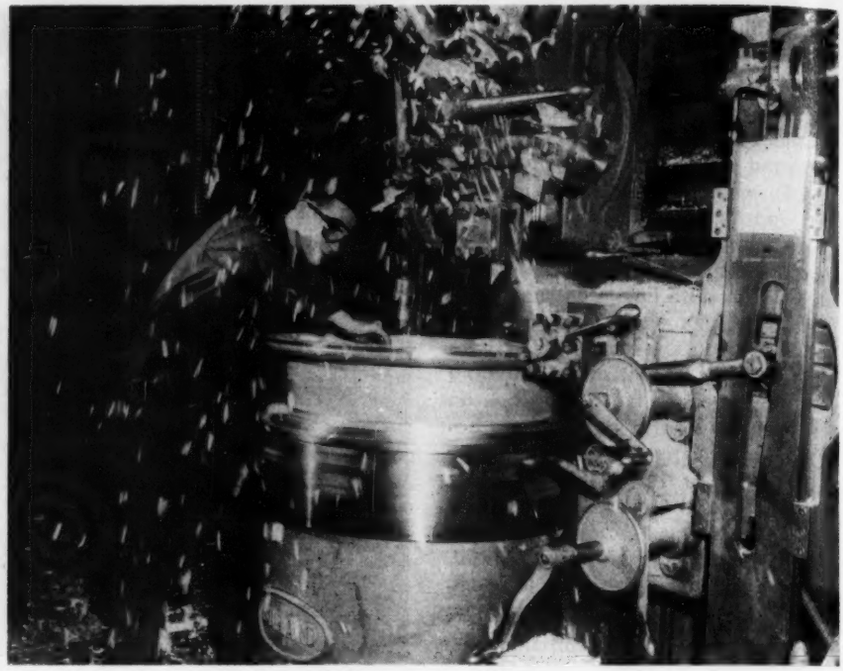
It will be used to handle increased production of aircraft instruments and accessories

BENDIX Aviation Corp. bought the property and facilities of Victor Animatograph Corp. at Davenport, Iowa. Included is a modern factory building. Bendix will use it to handle the increased production of aircraft instruments and accessories for the expanding military program, says Malcolm P. Ferguson, president of Bendix.

He says the currently operating plant, built in 1947 and containing 154,000 square feet of manufacturing space, would become a new division of the corporation and would increase to 17 the number of Bendix divisions, exclusive of subsidiaries.

Acquisition of additional manufacturing space was made necessary, Mr. Ferguson says, by increasing military demands. The Davenport factory, after installation of additional equipment, will be operated as an independent source of important aircraft instruments for the military. Production at Davenport will be one important step in the dispersion of Bendix facilities engaged in military production.

The plant was used by Victor Animatograph, a subsidiary of Curtiss-Wright Corp., for the manufacture of motion picture projectors and replacement parts. They will continue to be available from Victor.



CLOSE SHAVE: A 36-inch vertical turret lathe removes a thin, narrow ribbon of magnesium from a wheel for a Convair B-36 bomber, one of the important elements of the Air Forces. They are being made at the brake and wheel plant of B. F. Goodrich Co., Troy, O. Tolerances are as close as thousandths of an inch

Standard Coil Buys Kollsman

Standard Coil Products Co. Inc. arranged to get the Kollsman Division of Square D Co. Price was to be about $5 million. Kollsman, which makes aircraft instruments in its plants in New York city, will be taken over by a wholly owned subsidiary of Standard. No changes in personnel are planned. Standard makes tuners for television sets; Square D makes electrical equipment.

Convair Rumors Untrue

Production of a new model 40-passenger Convair-Liner commercial transport was started by Consolidated Vultee Aircraft Corp.—a clear refutation, says Convair board chairman Floyd B. Odlum, "of the speculation rumored by others that Convair intends to withdraw from the commercial transport field."

"Our schedules are adjusted," says he, "so we can readily produce commercial and military versions of the plane. Because Convair strongly believes in the value of turboprop applications in the commercial transport field in the future, we have established a company policy that the basic structure of the new Convair-Liner will be designed to accommodate properly the gas turbine engines when they have been service tested and are available for airline use."

Ryerson Ready in New Quarters

Joseph T. Ryerson & Son Inc., steel distributor, moved into its new and larger steel-service plant and office building that was started last January. The new plant, practically in the center of the Cincinnati industrial area, cost well over $1 million.

It replaces the former plant at Front street and Freeman avenue that was occupied since 1923 when Ryerson began business in the Cincinnati market. At that time it bought the plant and stock of the Cincinnati Iron & Steel Co.

The mail address of the company is unchanged; it's still Box 300, Cincinnati 14. The new telephone number is Kirby 3241. Aside from a short period of readjustment, the company expects that the new facilities will quickly be operating at peak efficiency.

Total floor space is 165,000 square feet—almost 4 acres.

Army Orders Bailey Bridges

Commercial Shearing & Stamping Co., Youngstown, will build Bailey bridges for the U. S. Army Corps of Engineers.

The bridge is a prefabricated structure that can be quickly assembled to replace bombed out units. Commercial Shearing made the bridges, as well as air bombs and ship parts in World War II. The company has hired women welders to work on the contract.

Linde Enlarging Oxygen Plant

Linde Air Products Co., unit of Union Carbide & Carbon Corp., will substantially increase the size of its East Chicago plant to provide for a big increase in production planned by the steel industry. Ground already has been broken. The construction is part of the overall national plant expansion program that Linde has underway.

The additional plant capacity will make East Chicago the largest single plant for producing high purity oxygen in the country.

The Linde plant supplies oxygen principally to the steel and metalworking industry in a large portion of the midwest. Besides being used for a variety of industrial operations —the most important are the oxyacetylene processes of cutting, welding and flame-treating of metals—Linde oxygen U.S.P. meets all medical re-

quirements for purity, so it is used in the treatment of diseases and ailments for which oxygen is needed.

Blaw-Knox Buys Pittsburgh Site

Blaw-Knox Construction Co. agreed to buy a parcel of land of about 55,000 square feet at Duquesne way and Garrison place, between Ninth and Tenth streets in downtown Pittsburgh. The land was acquired to provide a future site for the company's rapidy growing Chemical Plants Division. It is an engineering unit that specializes in the design and construction of complete plants for a wide range of chemical and processing industries. The division first achieved fame in World War II through its design of the nation's synthetic rubber plants. Again, the division is active on defense work. Details of the project, which will include an office building and parking space, have not yet been fully developed.

Eastern Steel Tank Moves In

Eastern Steel Tank Corp., Flushing, N. Y., is in its new quarters, a modern plant built on 3½ acres. Included in the list of products that Eastern Steel Tank serves its customers are stainless steel products for the chemical, food and brewing industries, specialized steel plate fabrication, ASME and non-code pressure vessels, tanks for combustibles ranging from 550 gallons to 150,000 gallons. The firm also does on-job fabrication of tank, stack breechings, etc.

T C & I Opens Concord Mine

Tennessee Coal, Iron & Railroad Co., a United States Steel subsidiary, has put its new Concord mine into operation. The mine is near Hueytown, Alabama, about 15 miles west of Birmingham. At capacity the mine will produce about 7500 tons of washed coal per day.

Cutting operations at the working faces are performed by electrically powered mining machines, adjustable to any position for under, over or side cutting. After blasting by permissible explosives, mechanical mobile loaders, caterpillar loaded, will load the blasted coal into shuttle cars at a maximum rate of 5 tons a minute.

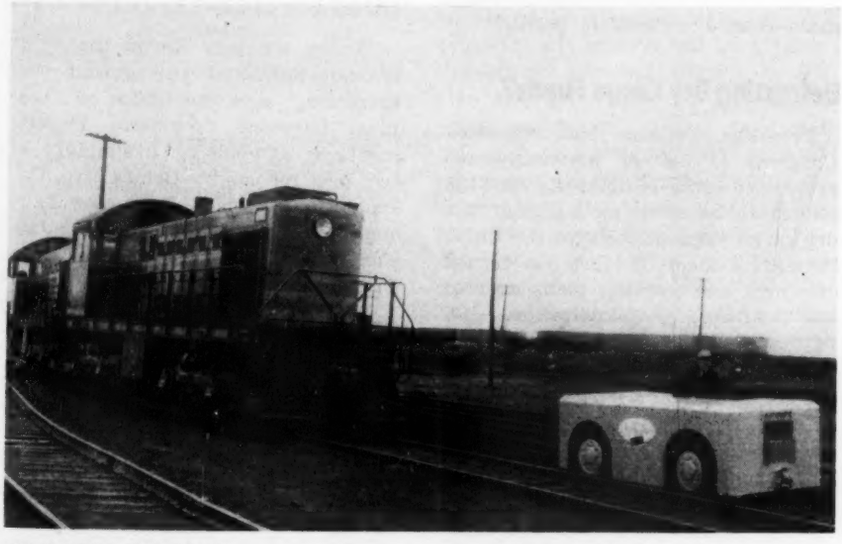
Equipped with the most modern devices to insure employees' safe and comfortable operations and maximum coal production and quality, the Concord mine utilizes many more approved developments in mine engineering underground and coal cleaning facilities above ground. Among them are eight-wheel, 7-ton capacity mine cars with automatic swivel couplings; a 75-ton capacity dump hopper; two heavy-duty, foundry type 5 x 10-foot single-deck scalping screens; crushers; breakers; blending bins, etc.

Ekco Plant for "New Product"

Ekco Products Co.'s new $500,000 plant at Whittier, Calif., will be ready for occupancy early in January. Benjamin A. Ragir, president, who just returned from an inspection tour of the 52,000-square foot factory, says it will be used for manufacturing and warehousing. Manufacturing, he says, will primarily be for a "new product."

Stockton Plant for American Can

American Can Co. will begin construction of a multimillion dollar can-making plant at Stockton, Calif., C. W. Roberts, Pacific division vice president says. The company bought 40 acres for erection of a 275,000-square foot plant capable of producing about 350,000,000 metal containers yearly.



VERITABLE DYNAMO: Two huge diesel locomotives weighing half a million pounds are towed by this powerful electrically propelled industrial tractor at a test in Chicago. The 10-foot-long, 6-ton tractor was made by Automatic Transportation Co., Chicago. Demonstration was conducted at the roundhouse of the Belt Railway of Chicago

Breakneck Speed

That's the rate at which materials handling equipment sales are running these days

MATERIAL handling equipment sales are running at almost double the 1949 average. Orders received immediately after the outbreak of war in Korea were three times larger than for the previous three months.

This was revealed at the annual meeting of the Material Handling Institute in New York, Dec. 7, along with plans for the further development of business in connection with the defense program.

Manpower Shortage Is Challenge—John G. Bucuss, general manager, Strapping Division, Acme Steel Co., Chicago, new president of the institute, said that demand for increased productivity and the shortage of manpower now presents two major problems for all industries and a direct challenge to all divisions of the material handling equipment industry.

Mr. Bucuss succeeds J. H. W. Conklin, Clark Tructractor Division, Clark Equipment Co., Battle Creek, Mich., as institute president. L. West Shea, Union Metal Mfg. Co., Canton, O., was elected first vice-president and J. C. Mevius, American Engineering Co., Philadelphia, second vice-president. R. Kennedy Hanson, Pittsburgh, was re-elected executive secretary and treasurer.

Show in 1951—The institute will hold an exhibition in the Chicago Amphitheatre, April 29-May 4 next year. Indications point to its being the largest ever held in this field.

New directors are: J. C. Moon, Signode Steel Strapping Co., Chicago, strapping group; J. E. McCaul, Jervis Webb Co., Detroit, conveyor; W. Allen, Thomas A. Edison Co., West Orange, N. J., electric accessories; E. Byrne, Chisolm-Moore Mfg. Co., Tonawanda, N. Y., electric hoists; John Bollinger, Yale & Towne Mfg. Co., Philadelphia, electric industrial trucks; and H. D. Smith, Globe Mfg. Co., Philadelphia, short stroke hydraulic lifts.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

The Washington atmosphere is gloomier than at any time since Pearl Harbor. And well it might be. It's going to take a lot finesse to get us out of the hole we're in

LAST WEEK'S White House talk about the declaration of a national emergency to arouse Americans on the gravity of the international situation was greeted coldly in Washington. It long has been felt that the public is far ahead of the administration about an emergency declaration.

Predominant opinion in Washington is that the nation continues to lack effective leadership: The administration didn't anticipate the crisis despite clear indications that something like it was building up; the steps the administration took are what Churchill might have called little and late.

Especially disappointing is that the chief agreement reached in the Attlee conferences calls for settling the war with the Chinese communists by "negotiation"—a word that in this case, it is feared, might mean "appeasement."

Heartsick—One thing is certain: The American people are shocked and heartsick over the handling of our Korean venture and its miserable outcome. They won't tolerate much longer a continuance of the lack of foresightedness of the past few years. Republican leaders in Congress sense the toughening sentiment and are letting up on politics; in the interest of national unity they have abandoned their campaign to unseat Secretary Acheson.

But it will take a lot more than that. Washington feeling is that our leaders led us into a trap and that it is going to need a lot more finesse to get us out of that trap than has been demonstrated so far by the men in our top echelon. The Washington atmosphere is gloomier than at any time since Pearl Harbor.

Authority to Roll Back . . .

Dr. Alan Valentine, director of Economic Stabilization, makes no bones about having full authority to force the automobile industry to recede from its recent price increases. "We will examine this situation thoroughly," he told a press conference, "and if we conclude the advances unwarranted we will order a rollback."

The recent steel price increases were announced before a price stabilization administrator had been appointed, said Dr. Valentine, and it is unlikely any action will be taken on them. "I do not necessarily say these steel price increases will not be reviewed; but we certainly will watch very carefully any future advances in steel prices."

Asked about the extent of his rollback authority under the law, Dr. Valentine summed it up: "We have authority to roll back prices and stabilize wages, which gives us the authority to roll back wages."

He gave no indication that a rollback of wages is in prospect.

Short Shrift—A salty character who undoubtedly will add color to the Washington scene is Michael V. DiSalle, director of price stabilization. The former Toledo, O., mayor shoots from the hip. "I didn't have a girl when I came in the first morning but I had one before the afternoon was over," he told press questioners who wanted to know what progress he was making in setting up a staff.

Gist of what Mike DiSalle had to say: "Profiteers will receive short shrift in this situation; a profiteer is anyone who takes advantage of a shortage of commodities to exact more than a reasonable profit."

Defrosting Dry Cargo Funds?

President Truman has requested Congress to defrost previously appropriated contract authority for $126 million to be spent on building fast dry cargo ships of the type for which Bethlehem Steel Co. just has turned drawings and working plans over to the Maritime Administration. MA figures 16 ships can be built with the money.

A Checklist for Weaknesses . . .

Companies that are having difficulty in meeting or maintaining defense production schedules will benefit by reading a 48-page book, says the Business Information Service of the Department of Commerce. The book is substantially a checklist for locating weaknesses in production operations. It is "Production Management in Small Plants," written by Frank K. Shallenberger, associate professor of industrial management, Graduate School of Business, Stanford University, Stanford, Calif., and is obtainable from Professor Shallenberger at 50 cents per copy.

A Really Effective Filter . . .

One of the programs placed before the NPA Iron & Steel Division for possible allocation involves the construction of a number of plants in separated areas of the country for the manufacture of a new glass fiber filter paper developed at the Naval Research Laboratory, Washington. Made of glass fibers 1/20th the thickness of the human hair and containing no imported materials, the paper is "5000 times more effective" than presently commercially available filters.

In gas mask tests only one particle of smoke in 100,000 passed through the filter, and with no increase in the normal breathing resistance of the mask. The material is said to have other military and commercial uses. Because the fiber paper is thinner and capable of withstanding more intense heat than insulating papers now used in condensers, for example, it will make for reduction in size of condensers used in electronic equipment.

Threshold of Cold Extrusion . . .

"Today we may be on the verge of wide industrial use of cold steel extrusion," says the Office of Technical Services, Commerce Department, in announcing availability of two new reports by Heintz Mfg. Co., Philadelphia, which conducted thorough-going studies into cold extrusion under contract with the Army Ordnance Corps.

The new Heintz reports are numbered PB 96704s2 and PB 96704s3 and may be purchased from the Photoduplication Service, Library of Congress, Washington 25. Prices are $2.75 and $4.75, respectively, for microfilm, and $7.50 and $15 for photostats; checks should be drawn to order of the Librarian of Congress. The reports identify the types of steels suitable for cold extrusion, and describe best methods of heat treating the steel and preparing its surface for extrusion.

The Sun is Your Undoing

The puzzle of smog—how it is produced and what it consists of—has been figured out by Dr. A. J. Haagen-Smit, chemist of Pasadena's California Institute of Technology.

With an associate, R. A. Van Meter of the U. S. Bureau of Mines, Dr. Haagen-Smit traced smog from chemical activity caused by the sun to effects like fumes, crop damage, eye irritation and damage to rubber. The experiments disclosed that smog consists of minute particles of products of combustion or oxidation of a wide variety of hydrocarbons. It was found that actual smog particles are caused by automobile exhausts, cigaret smokers, backyard incinerators, refineries, foundries, and many other sources.

Elemental sulphur, once thought the cause of odor associated with smog, was found to be a negligible factor. Dr. Haagen-Smit says the sun serves as catalyst in starting the chain of events in producing smog. If industrial areas were covered continuously by heavy clouds, they would be smog-free.

Next job of Dr. Haagen-Smit's group: To find what percentage of Los Angeles smog comes from incinerators, automobiles, steel plants or foundries. Of particular interest to Los Angeles metalworking plants and foundries, Dr. Haagen-Smit is determining whether millions of persons burning trash produce more or less smog than a few large foundries or steel plants.

A Gold Rush?

BELIEVING that there's a gold mine in the floor of an old factory at Fort Madison, Iowa, a Chicago refiner is willing to spend $20,000 to back up his thinking. The floor is 10,000 square feet of the W. A. Sheaffer Pen Co. plant that must be moved to make way for a plant addition. For more than 30 years Sheaffer workmen have been shaping pen points above the old flooring, and though the company takes precautions to recover gold dust and tips, the smelter thinks there is enough metal in the floorboards to justify his $20,000 bid to rip them up. He also figures he'll be able to get some osmium, a hard metal used in alloy form on the tips of high quality pen points.

His name? Pending receipt of bids from other would-be prospectors, his name has been withheld.

Smog Thins Out in California

Efforts to clear Los Angeles of smog are making headway says Gordon P. Larson, director of Los Angeles County Air Pollution Control District.

In his annual report submitted last month to the Los Angeles County Board of Supervisors, director Larson said air pollution in Los Angeles has been reduced 35 per cent since April, 1948. Smog control in Los Angeles is enforced under a state law considered a model statute passed by the California State Legislature.

The report cited specific gains in "sunny California's" war on smoke and fumes. Visibility improved 30 per cent and air concentrations of sulphur dioxide and sulphur trioxide was reduced 50 per cent. Since 1948 when the district started its work, $3,924,500 of smog-abatement equipment has been installed. In the same period 6000 sources of air pollution have been corrected, said Larson.

Clean Air, Recover Ore

A second major step to control ferromanganese smoke at Duquesne Works of Carnegie-Illinois Steel Corp. is a ferromanganese gas-cleaning system designed to eliminate dust discharged from the furnace stacks and to recover ferromanganese ore. Final work is about completed on the first project in the plant's smoke control program—a bleeder stack to regulate pressure of ferromanganese gas from the furnaces. The 220-foot stack will be placed in operation soon. It will automatically control and burn ferromanganese gas not burned in the plant's boiler house.

The gas-cleaning system planned at Duquesne was designed by U. S. Steel engineers. It will be the first of its kind ever built. Besides its important job in smoke control, the cleaning system will provide a supply of clean gas for the plant's boiler house. The floury manganese dust removed from the gas will be thickened and pressed into briquettes for recovering the contained manganese, one of the steel industry's critical raw materials.

Chemical Society Elections Held

Dr. Edgar C. Britton, director of the organic research laboratory of Dow Chemical Co., Midland, Mich., is the president-elect of the American Chemical Society. He will head the society in 1952.

President for 1951, the society's Diamond Jubilee year, will be Dr. N. Howell Furman, Russell Wellman Moore professor of chemistry at Princeton University. He will take office Jan. 1 to succeed Dr. Ernest H. Volwiler, president of Abbott Laboratories, North Chicago, Ill.

Safety Pays Off Communities

"Safety Savings" checks for $69,050 have been mailed to various operations of Jones & Laughlin Steel Corp. The checks were for the amount saved at the different units of the corporation as a result of a reduction in accidents in 1949. It all came about when in February of last year Adm. Ben Moreell, chairman of J & L's board, announced a procedure that would allow the savings effected in insurance and compensation payments to be used for improving welfare and hospital facilities in communities in which J & L operates. Lower payments on insurance and compensation were brought about because of reduced number and severity of accidents. The money distributed to such organizations as the Community Fund, the Red Cross, police athletic funds, Boy Scouts, etc. varied from $100 to $13,775. Special impetus was given J & L's safety program several years ago when Admiral Moreell said: "If we can't afford safety, we can't afford to be in business." Twenty-six units of the corporation proved they could afford safety.

Nuggets

SPEAKING before the Wharton School of Finance & Commerce of the University of Pennsylvania, C. E. Wilson, General Motors president, got off a few nuggets:

" . . . Perhaps the only difference (between communism and socialism) is that a communist is a socialist in a hurry."

" . . . Our high standard of living cannot be explained on the grounds of greater natural resources or of racial superiority. The answer lies in the simple fact that by accepting the challenge of individual competition as a responsibility that comes with personal freedom, we have done a better job of applying our human energy and individual initiative to the improvement not only of ourselves but of all."

" . . . Productivity is the one and only road to an economy of plenty."

Britain... Gets Set To Take Over the Steel Industry;

The State will take over 92 steel companies on Feb. 15 at a time when they need their undistracted attention for production. A reversal on nationalization is unlikely

THE BRITISH steel industry faces its biggest crisis in history. The State will take it over on Feb. 15 at a time when its undistracted organizational and productive energies are needed to meet an unprecedented demand for its products.

Steel will meet the same fate as the railroads, coal, gas, electricity and much of the trucking industry unless the Conservatives win an election in February or March. If they do—and their chances are not good—they could still reverse the machinery and return the holdings to private companies.

New Impetus—Korean events and rearmament spurred British steel production in 1950, although even without Korea the industry output would have hit a peak. It will produce 18 million net tons this year, compared with 17.4 million in 1949 and 16.7 million in 1948. In October the annual rate exceeded 19 million tons, a new high for that month. The production target for the year, 17.5 million tons, will be reached comfortably.

The industry should do even better in 1951 because new capacity will be coming in. A giant South Wales plant will be in full operation next year, as will other new facilities. But steel men ask this question: Will nationalization cause such turmoil that capacity gains will be nullified by production losses?

Without Arms—But that's not the only question for 1951. Another is manpower. All British industries, but particularly the steel consumers, have a labor shortage—actual or imminent. Some 250,000 additional workers are needed to fulfill the rearmament program. As it looks now the defense program will hit its peak in 1952 and 1953. The problem will be acute by then.

A third question for 1951 is productivity. There have been improvements—steel has increased its output with no employment gains—but progress is slow. U.K. industry continues to be under-powered. The ratio of electric power used, per British and U. S. worker, shows one reason why Britain still has troubles. Iron foundrymen in the U.S. use 3.2 times the electricity that the workers in the U.K. have. The ratio is 2 to 1 in the machinery industry; 3.4 to 1 in cement; and 1.4 to 1 in automobiles. The average productivity of an employee in American manufacturing industry is represented as 2.2, compared with 1 for a corresponding individual in Great Britain.

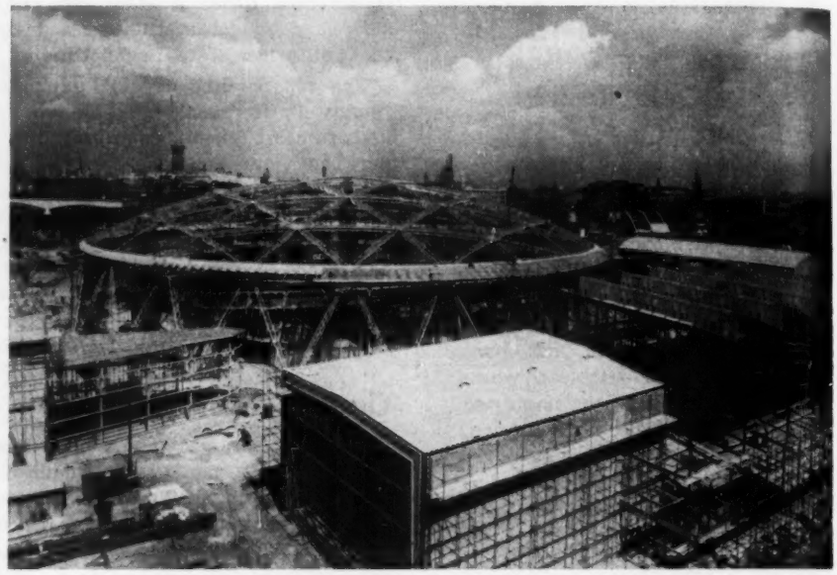
Big User—Auto makers have been pressing for more sheets, but they aren't likely to get them in 1951. Those shortages force the manufacturers to operate at about 80 per cent of capacity. Yet of all steel consumers, no industry has a better record in export and production. Output has risen from 341,000 cars in 1938 to 525,000 in 1950. The industry is responsible for 10 per cent of the whole of Britain's export trade. Home sales have been sacrificed to make the foreign business possible. The government limits domestic sales of new cars to 110,000 a year; manufacturers could sell more than 1 million.

In addition to car exports, the industry has greatly increased its overseas shipments of trucks, busses and farm tractors. Rearmament and a growing labor shortage may crimp the auto industry's entire export program in 1951.

The shipbuilding industry is struggling with the problem of reuniting its dispersed labor force. In late 1949 and early 1950 the industry declined and had to lay off some of its workers. It's trying to get them back now because Korean events have boosted orders. One big contract was placed by Standard Oil Co. of New Jersey with Vickers-Armstrong Ltd. for two 26,500 ton tankers.

The Great Lubricant — American oil companies are placing pipe contracts with British firms, too. More than $5.6 million in dollar contracts have been placed by American oil and natural gas companies with Stewards & Lloyds, for shipment to the U.S. The pipe will be made at the company's works in Scotland, the Midlands and South Wales.

British manufacturers of electrical machinery have been working at full capacity ever since the end of the war, a state that is likely to continue for years to come. The British electricity authority has a $285.6 million five-year program to build 47 new stations and 35 extensions. The



DOME OF DISCOVERY FOR BRITAIN'S 1951 EXHIBITION

. . . a bleak future for coal and steel, a bright one for machine tools

HERE are two more articles in a series on the economic pasts, presents and futures of the major Western European countries. On Dec. 4 we wrote about Italy and Sweden, on Dec. 11 about France and Belgium. Next week we conclude the series with a summary of the situation in Western Europe. Complete iron and steel statistics for all industrial nations of the world will be carried in the 1951 Metalworking yearbook issue, Jan. 1.

Economic Freedom Seen for ...West Germany

West Germany is returning to the fold of free nations as economic and political controls drop off one by one. The Korean war fosters the new attitude

electrical machinery industry also has large foreign contracts; one is a $656,000 order for two hydroelectric generators scheduled for Victoria, Australia.

All Set—Builders of rolling stock are assured of full activity for a long period. British railways still have a long way to go to bring back equipment to the standard of efficiency prevailing before the war, and the state-owned workshops are well employed. Privately owned builders have a considerable amount of work on hand for foreign railroad companies, but output is limited by shortages of steel.

The machine tool industry faces a bright future. Orders are there in plenty for the home and export trade but manpower continues a serious problem and one likely to increase.

All Dark—The outlook for coal is bleak. The industry is losing men at an average rate of 800 a week; it has lost 3000 since September.

Steel and manpower shortages and low productivity are major economic problems which Britain must tackle in 1951. But the nation's industrial position is vastly improved over what it was a year ago. It can sell all of its slowly increasing production. Its dollar gap still shows, but it's much easier to handle now than seven or eight months ago. Aided by Korea, rearmament, ECA and its own bootstraps, U.K. industry is pulling itself together, despite nationalization.

THE RETURN of the wayward son —that describes West Germany's new economic and political position in the free world.

Now—with reservations—the question is how much West Germany can produce. A year ago the problem was how much the Ruhr should be permitted to produce.

Today and Tomorrow—Now the new republic is permitted to produce 12.2 million net tons of steel a year. Steelmen take it for granted that the long-term steel shortage on world markets will accelerate the reconstruction of German capacity to at least 17 million tons which would assure an annual steel production of at least 16 million tons. They expect to whittle away the remaining Allied resistance to reconstruction of August Thyssen Huette and the Reichswerke steel plants.

Two events in 1950 largely account for Germany's new role: The Korean war, and the Schuman proposal to pool West Europe's coal and steel.

Pressure for Exports—Korean developments have put the pressure on Allied commissioners to raise steel export quotas. That has backed up to put pressure on for steel industry reconstruction. The world situation has snowballed all industrial production in West Germany so that in 1950 for the first time since the end of World War II, general metalworking output was comparable to 1936 levels.

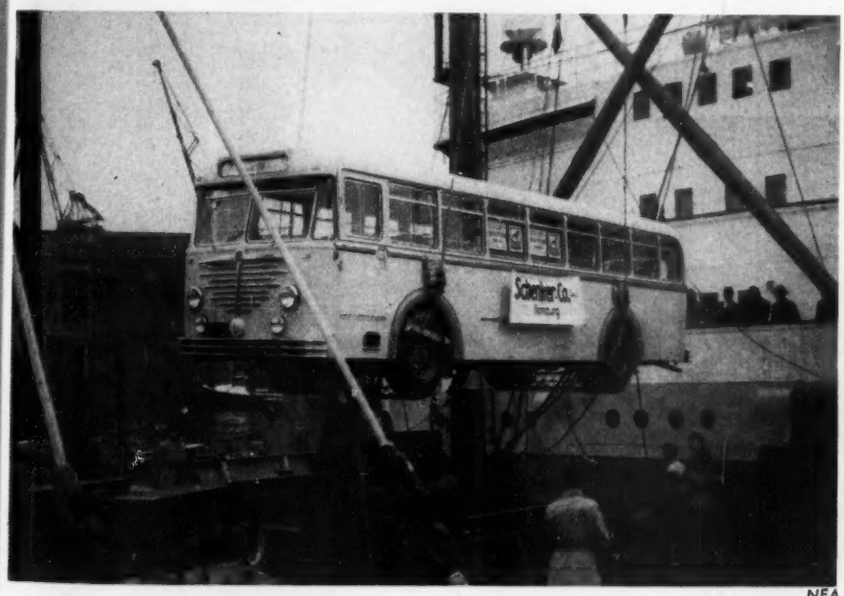
The Germans are playing their Korean cards shrewdly and have nearly won virtual independence politically. That, too, spurred economic activity.

R.S.V.P.—The French invitation to the Ruhr to participate in the Schuman plan was concrete evidence of West Germany's improved position. Germany's acceptance seemed proof of a new willingness to co-operate. Her acceptance may involve some real sacrifice for she has a lower cost steel industry than some other participants, notably France, and will have to make some price concessions.

The fate of the Schuman plan depends to a considerable degree on whether or not Germany will co-operate still more and give the Schuman participants the scrap they want. France is asking the Ruhr to guarantee minimum scrap shipments to her under the Schuman plan of 44,000 tons a month. Italy wants a guarantee of 50,000 tons. Germany's scrap exports reached a peak in July when 337,000 tons were shipped. Exports have dropped since then. Total scrap supplies are around 605,000 tons a month now but declining slightly because easily available scrap from blitzed cities is nearly gone. Scrap prices reflect the changing situation and have jumped to $24 per metric ton for heavy melting grades. That compares with a Belgian price of $35 per metric ton.

Double Trouble — Germany's economic position has improved but she still has trouble, chiefly steel reorganization and prices. The much debated and long awaited plan to reorganize the Ruhr steel plants into new vertical units has hit more snags. The Allies disapprove of many provisions in plans already submitted. The plan most likely to be adopted eventually, with modifications, would set up 26 steel firms.

Rising prices are plaguing German industry. Coal has just gone up about 16 per cent and steel will have to advance at least a like amount. Most steel companies are groping in the dark for a fair price these days because jumbled accounting history and practices make it difficut to know just what a fair price and profit are.



NEA

GERMAN METALWORKING OUTPUT NOW COMPARABLE TO 1936 LEVELS

. . . busses for Egypt from Buessing's Hanover works

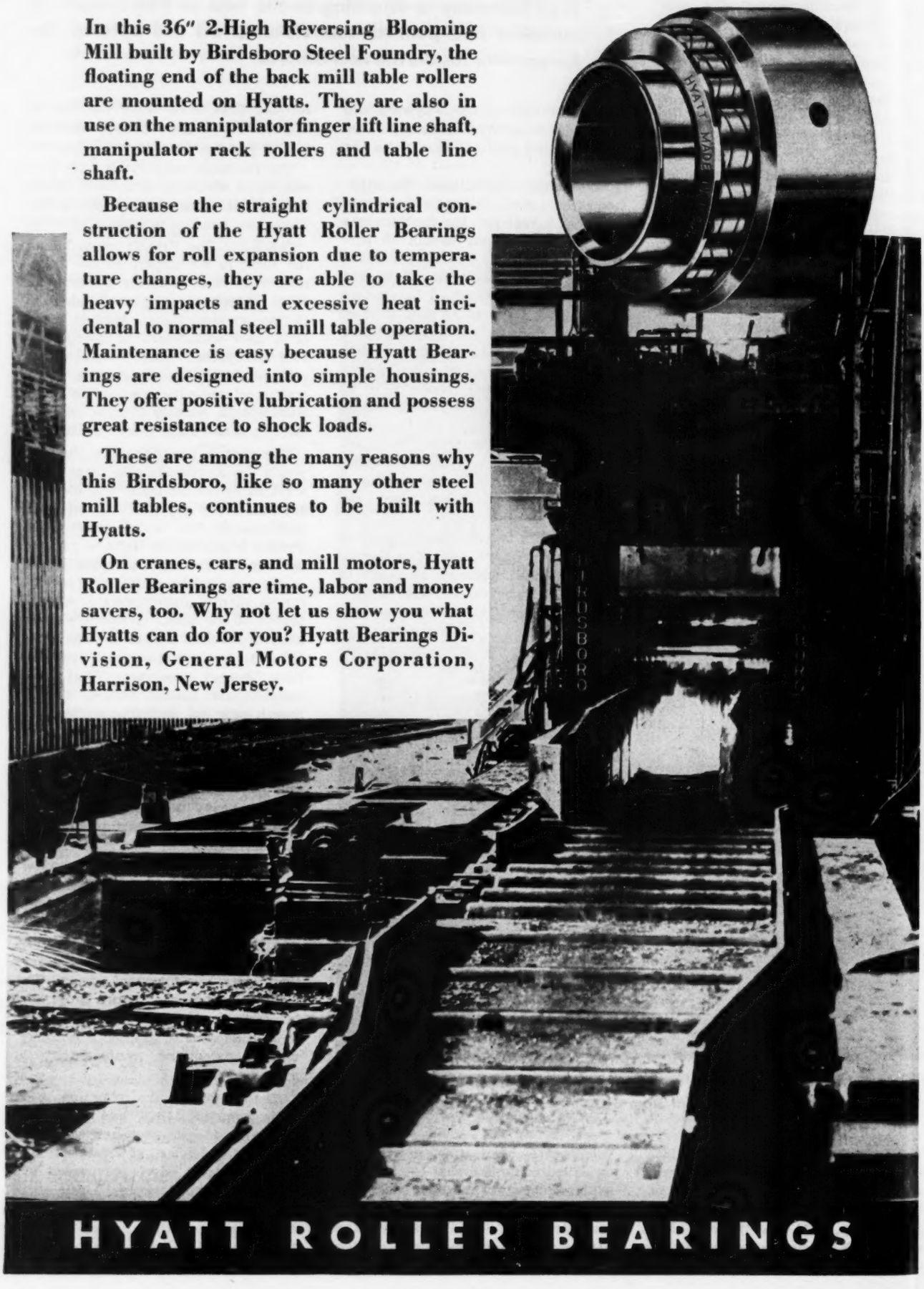
HYATTS—Time, Money and Labor Savers

In this 36" 2-High Reversing Blooming Mill built by Birdsboro Steel Foundry, the floating end of the back mill table rollers are mounted on Hyatts. They are also in use on the manipulator finger lift line shaft, manipulator rack rollers and table line shaft.

Because the straight cylindrical construction of the Hyatt Roller Bearings allows for roll expansion due to temperature changes, they are able to take the heavy impacts and excessive heat incidental to normal steel mill table operation. Maintenance is easy because Hyatt Bearings are designed into simple housings. They offer positive lubrication and possess great resistance to shock loads.

These are among the many reasons why this Birdsboro, like so many other steel mill tables, continues to be built with Hyatts.

On cranes, cars, and mill motors, Hyatt Roller Bearings are time, labor and money savers, too. Why not let us show you what Hyatts can do for you? Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



HYATT ROLLER BEARINGS

By H. C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

The tone of the automakers to the Economic Stabilization Agency's telegram to rescind price increases was mild, but the net effect was to say: "Nuts"

DETROIT

SPEARHEAD of the government's attack on inflation has consistently been aimed at the automotive industry. Regulation W and its amendment constitute an important part of the strategy, and the telegram to ten automobile producers asking that they "suspend" car price increases is phase two of the campaign. Last week the lines were drawn for the "battle of the boost" which some non-combatants thought was the first stage of an allout war that would be finished only by the application of wage-price controls in many industries other than the automotive.

The big gun was unlimbered when Alan J. Valentine, Economic Stabilization administrator, wired Ford and General Motors asking that they rescind their price increases of two days earlier, and dispatched telegrams to eight other other car makers—Chrysler, Crosley, Hudson, Kaiser-Frazer, Nash, Packard, Studebaker and Willys-Overland—asking them to withhold any contemplated price boosts.

Soft Answers—All-day policy discussions within Ford and GM were necessary before the largest producers made their answers, and when these came they were strikingly similar. Each said, in effect: "Our increases were carefully thought out, they are modest and insufficient to cover all our increased costs." The tone of their answers was mild, but they might just as well have used the expression made famous during the Battle of the Bulge: "Nuts."

Henry Ford II gave these as reasons why his company could not comply with Valentine's request:

"It implies that Ford Motor Co. exists in an economic vacuum and that one or two companies in a single industry somehow have special immunity from today's inflationary forces.

"It implies further that Ford Motor Co. has selfishly and without thought put the welfare of the company before that of the country.

"In brief, our annual costs since the start of the Korean war have gone up a total of more than $100 million on passenger cars alone, and they are still going up.

"On top of this, our production schedules have already been reduced approximately one-third by shortages of materials and government limitation orders, under regulations issued by the National Production Authority."

GM's president, C. E. Wilson, replied thus: "We regret that we find it impractical to accede to your sudden request to withhold or withdraw the reasonable pricing of our new 1951 model automobiles . . . . It is impractical to halt this flow of production or the merchandising of these cars to the public at fair prices . . . . We are disturbed that you have suddenly selected for a price stabilization request a corporation that has done one of the very best jobs in holding prices . . ."

How About Rubber? — Both companies pointed out how they had held the price line as long as they could, had even reduced prices. Both cited their increases in materials and labor costs, and both very pointedly noted that only the day before Valentine sent his wire the government itself, through the RFC, had increased the price of synthetic rubber 12 per cent on one grade and 32 per cent on another. GM indicated it believed the government was not acting fairly by requesting the company to hold the line while "no stabilizing action has been taken regarding the prices of these materials, many of which the government is stockpiling."

Walter Reuther, UAW-CIO president, took the car price increases as an opportunity to get some digs in and carry on his campaign for "decisive action by the government to stop runaway inflation." General Motors, he said, did wrong to increase car prices.

However, the original wrong, he emphasized, was committed by the steel industry. "The steel industry," he asserted, "must accept the major responsibility for pulling the trigger that sets off this chain of reaction. However, this does not excuse General Motors, the wealthiest and most profitable corporation in the world, for passing on this increased cost to automobile consumers where it will be reflected in reduced purchasing power. In both cases, management is acting out of a completely selfish interest to protect profits that have already risen to the proportions of a major national scandal."

The steel price increase was of relatively minor importance to automobile manufacturers (STEEL, Dec. 11, p. 73), and was mentioned only in passing by the two car makers.

Besides asking for the price increase suspension "until the entire question of price can be examined and determined by this agency," Dr. Valentine's telegrams invited the ten automakers to a meeting in Washington last Wednesday. All ten companies were sending their top brass for the session.

Bulging Foundations — The Independents were satisfied with the job that GM and Ford had done in answering Valentine's request. The behind-closed-doors opinion: It is unrealistic as hell for the government to begin a price stabilization effort against end-product producers. You can't expect to keep a level ceiling if the foundations are bulging out of the ground, they say.

The independents are on the defensive for their 1951 model prices. The trend was up on many of their new designs, but the structure was mixed. For example, Packard and Studebaker increased the prices of their smaller jobs and lowered those on the larger models to more competitive positions. Nash prices were

Auto Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	842,304	678,092
September	760,808	657,073
October	804,553*	601,021
November	632,997*	465,135
December		384,318

Weekly Estimates

Week Ended	1950	1949
Nov. 18	122,498	115,152
Nov. 25	122,683	76,026
Dec. 2	152,107	72,994
Dec. 9	159,862	52,514
Dec. 16	162,000	86,226

Estimates by Ward's Automotive Reports

* Preliminary.

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

up 1.5 per cent. K-F increases ranged from $10 to $120.

Chrysler has been playing a waiting game, its 1951 products being scheduled for introduction early next year. Until last week, furthermore, the company could not cite recent wage increases as a partial reason for higher prices.

Chrysler Falls in Line

Chrysler Corp. pulled another surprise on the industry last Monday by announcing a five-year contract incorporating an escalator clause, annual improvement factor, $125 a month pension, a modified union shop, an immediate pay boost of one cent an hour and other benefits.

The new agreement, when ratified, replaces the three-year contract signed in May after the bitter 100-day strike for pensions. Since that time Chrysler and the union agreed to a wage increase of 10 cents an hour, an increase which was subsequently bettered by other automakers. The new agreement brings the company's pay scale back into line.

On No Subject — The contract, to run until Aug. 31, 1955, is not reopenable on any subject. Its escalator clause is the same at that in other UAW contracts, one cent increase or decrease for 1.14 point change in the Bureau of Labor Statistics consumers' price index, the one-cent hourly wage increase brings Chrysler's pay into comformity with other companies that employ the escalator clause. The automatic 4-cent hourly improvement factor provided in the contract will not enter the picture until June of next year because the 10-cent increase of August covered that phase.

Insurance provisions were liberalized, the pension program expanded. The equivalent of three weeks' vacation pay for 15-year employees and a new provision for payments in lieu of vacation for lesser service employees was also included. Certain classification adjustments for those in 7-day operations, patternmakers and die dummy builders and other technical changes were incorporated in the new contract. Norman Matthews, UAW-CIO Chrysler director, estimated the new package means gains of 6.5 cents an hour.

No Excuse for the Little Woman

Chrysler's new car, coming next month, will contain an innovation which forecasts some profound long-term effects. "Hydraguide," a hydraulic power steering mechanism, will be included in some models. Made by Gemmer Mfg. Co., power steering is nothing new, except for cars. It's been needed for heavy trucks, naval vessels and the like, but with it on cars the little woman has no legitimate reason for saying she can't park the car. It has other advantages, less driver fatigue, elimination of road shock, safer car operation because it keeps control if a tire blows.

THE FLARED EFFECT: The Series 62 Cadillac sedan has a new instrument panel that combines graceful styling with a new and more convenient grouping of controls. A new two-spoke steering wheel repeats the flared effect set by the front bumper. As usual, every consideration is given passenger comfort and convenience in the interior

More Flare, More Fin

Cadillac today becomes the newest car in the 1951 line-up and the glowing words of Don E. Ahrens, general manager of the GM division, proclaim that the new models embody the finest combination of motor car engineering and designing ever presented by Cadillac. Not radically different from the 1950 car, the new models show a flare design in the front bumper which integrates larger bumper guards to emphasize the low and wide look. Open work abreast of the grille, hooded head lights and a broader "V" hood emblem promote this spread-out feeling. The tail-lamp housing has been redesigned to incorporate the backup lights but retain the distinctive "lighthouse" fin effect.

A warning light in the instrument panel cluster replaces the conventional oil pressure and generator indicators. A warning light also indicates when the hand brake is on. The starter button is eliminated by ignition-key starting.

Hydra-Matic drive this year becomes standard equipment on all models. Design of this automatic transmission has been modified to permit rocking the car. A new precision balanced piston, better system for lubrication of piston and cylinder walls, redesigned valve guides and new choke control feature the engine changes. A newly designed brake shoe anchor automatically compensates for wear and permits self-centering of the shoes. Shock absorbers are new and the body mounting brackets are repositioned for better insulation of the body from chassis vibration.

Driver Comfort in Trucks

Chevrolet's new trucks put emphasis on creature comfort for the driver. Adjustable ventipanes in the side cab windows and two layers of springs in the simplified seat assembly ought to make a hot and hefty driver much happier. Self-energizing brakes with bonded linings follow the passenger car design on the light truck models. Heavy-duty trucks have "twin-action" rear brakes, also self-energizing, which have two cylinders and shoes.

Trucks in ten wheelbases are available. Gross vehicle weight ranges from 4000 to 16,000 pounds. Changes in front axle, springs and tire sizes permit a boost in the gvw of the 4100 and 4400 series from 12,500 to 14,000 pounds. Minimum gvw of series 6100 to 6400 trucks has been upped to 14,000 pounds.

Best Things in Life are Free – RUNNING

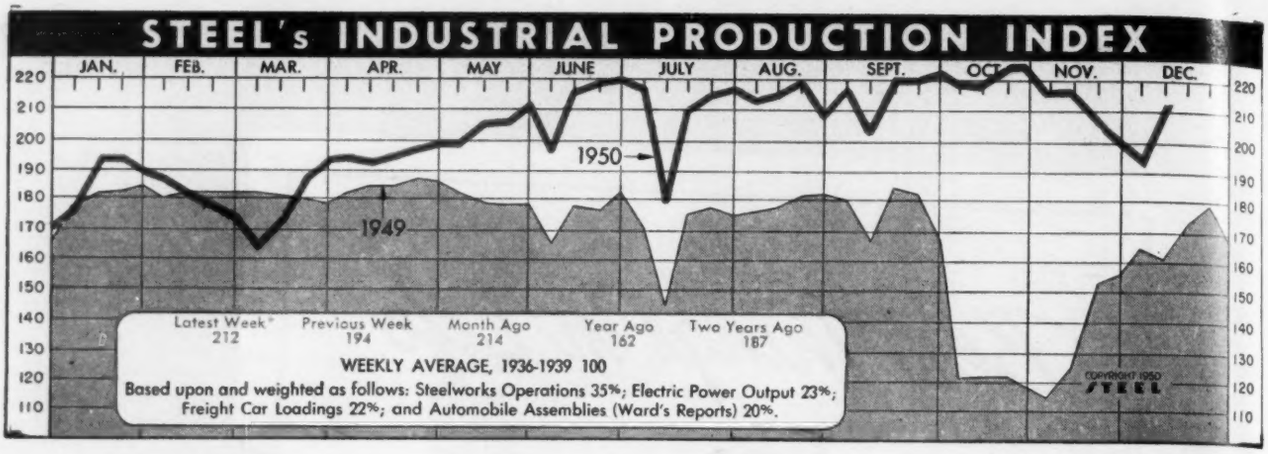
Friction has some use
but mostly it is
freedom from friction
this world needs.
In machines, that freedom is
essential to long, useful life.
Ball bearings give you most,
New Departure makes them best.

Nothing Rolls Like a Ball...

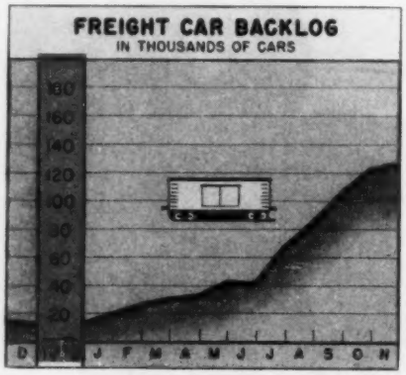
NEW DEPARTURE
BALL BEARINGS

NEW DEPARTURE · DIVISION OF GENERAL MOTORS · BRISTOL CONNECTICUT

121


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1950
1949
Latest Week* 212
Previous Week 194
Month Ago 214
Year Ago 162
Two Years Ago 187
WEEKLY AVERAGE, 1936-1939 100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
COPYRIGHT 1950 STEEL

Week ended Dec. 9 (preliminary).



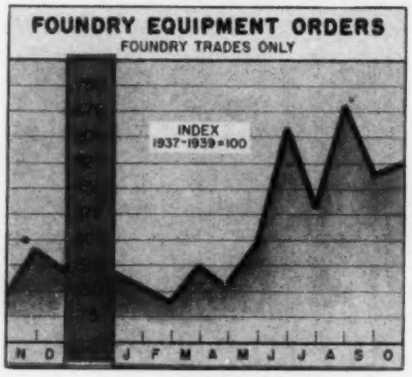
Charts—Copyright 1950, STEEL

Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,366	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	199	30,539	73,188
Apr.	3,308	30	32,857	52,569
May	11,636	589	42,300	52,281
June	2,095	153	40,585	42,813
July	30,065	408	67,084	36,564
Aug.	24,255	185	86,156	28,731
Sept.	25,611	123	106,611	22,203
Oct.	21,893	201	122,148	17,377
Nov.	10,573	1,145	126,870	14,146
Dec.	....	1,220	.....	12,036
Total	....	6,248		

*End of month

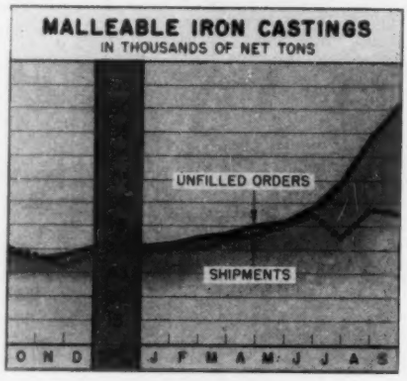
American Railway Car Institute



Foundry Equipment Orders

	Index		Value in Thousands	
	1950	1949	1950	1949
Jan.	159.3	149.9	$731	$694
Feb.	113.1	144.4	519	668
Mar.	225.2	190.8	1,034	883
Apr.	160.6	172.0	737	797
May	294.9	121.9	1,353	565
June	622.7	164.9	2,858	764
July	401.8	146.6	1,844	679
Aug.	693.6	127.1	3,183	589
Sept.	483.8	166.6	2,220	772
Oct.	526.8	133.5	2,417	618
Nov.	....	270.4	....	1,250
Dec.	....	201.0	....	929

Foundry Equipment Mfrs. Assoc.



Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	62.9	71.9	62	126
Feb.	60.4	66.7	67	118
Mar.	66.3	72.1	70	102
Apr.	69.8	61.3	76	95
May	76.2	54.6	77	79
June	82.3	59.6	87	70
July	67.5	44.4	105	71
Aug.	86.0	58.1	132	61
Sept.	82.5	60.5	153	58
Oct.	...	57.2	...	54
Nov.	...	49.4	...	56
Dec.	...	57.4	...	61
Total	...	713.1		

* For Sale. Bureau of the Census

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction Nov.27	Indus. Produc. Dec.11	Steel Forgings Nov.20
Durable Goods Nov.27	Machine Tools Nov.27	Steel Shipments ...Nov.27
Employ. Metalwkg..Nov.27	Price Indexes Dec.11	Vacuum Cleaners...Dec.4
Employ. Steel Nov.20	Purchasing Power ..Dec.11	Steel Castings Nov.20
Fab. Struc. Steel...Dec.11	Radio, TV Aug.14	Wages, Metalwkg...Nov.27
Furnaces, W. Air ..Nov.20	Ranges, Elec. Dec.4	Water Heaters Nov.13
Gear Sales Dec.4	Ranges, Gas Dec.4	Washers Dec.11
Gray Iron Dec.11	Refrigerators Dec.4	

Freight Car Backlog Mounts

Freight car backlogs kept on climbing in November even though orders placed in that month were only half as large as they were a month earlier. A joint announcement by the American Railway Car Institute and the Association of American Railroads puts the total backlog on Dec. 1 at 126,870. This compares with 122,148 on Nov. 1 and 14,146 on Dec. 1, 1949. In the latest figures issued the backlog is divided 91,512 with the carbuilder companies and 35,358 with railroad shops.

Deliveries of new domestic freight cars in November totaled 5791, compared with 5501 delivered in October. Of the 5791 cars delivered 3352 were built by the carbuilders and 2439 by the railroad shops. November's deliveries fell more than 1000 cars short of the goal set up in the NPA program.

Orders for new freight cars totaled 10,573 in November, compared with 21,893 in October. Carbuilder companies will build 9573 of the new cars ordered and railroad shops will build the remaining 1000.

Castings Rate Higher

Malleable iron castings shipments in September were 10 per cent higher on an average working day basis than a month earlier and 42 per cent higher than in September, 1949. Commerce Department's unadjusted total for the month was 82,479 tons and was below that for August because of less working days.

New orders continued to come in faster than shipments and the backlog rose 20,209 tons during the month to 152,583 tons. The latest backlog figure is more than 96,000 tons higher than it was on the same date in 1949.

The Business Trend

Keeping work-forces intact while waiting for defense contracts to take up the slack in reduced civilian goods production is a big worry for many metalworking companies

INDUSTRY'S wants are simple: They're like those of the little boy who cried that all he wanted for Christmas was his two front teeth. What industry wants is for the government to stop talking rearmament and to tell what it wants specifically by placing contracts for the necessary war materials. As things stand cutbacks in metals for civilian production will bring about reduced output in consumer lines without essential or military work to take up the slack. Manufacturers know that if their employees don't have enough work to keep them fully occupied, they'll look for other jobs and won't be around when defense contracts are placed.

Price and wage controls are only a step away. Voluntary controls may be tried first, but they just will not work. Mandatory controls will follow. Some businessmen are suspicious that controls will have the taint of governmental hocus-pocus and will not be equitable. There certainly seems to be no concerted thought along price lines among government agencies. An example of these differences in opinion is in the request by the Economic Stabilization Agency that Ford and General Motors rescind their price rises. If followed hard on the heels of an even larger percentage boost in synthetic rubber prices by the RFC.

Industrial output was back to what has become normal in recent months in the week ended Dec. 9. STEEL's industrial production index moved up 18 points that week and reached a preliminary 212 per cent of the 1936-1939 average. A large gain in the steelmaking rate and a smaller increase in automotive assemblies accounted for the rise.

Steelmaking Gains . . .

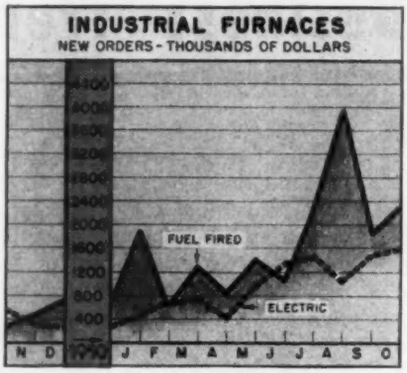
Output of steel for ingots and castings moved a little higher last week from the 101 per cent of capacity recorded in the week ended Dec. 9. It didn't set any new records but showed again that steelmakers aren't wasting any motions in trying to pour all the steel possible to meet demand. A new twist in steel expansion was contained in the announcement that General Motors has agreed to lend Jones & Laughlin a large sum of money for part of its expansion program. Although consumers bought steel producing companies in the early postwar period, it is a departure for a consumer to loan expansion funds to a major producer to obtain steel.

Big Year for Autos . . .

A year ago there were few optimists even in the auto industry who expected records to be set in 1950 in wholesale lots. Many felt the auto industry could afford to rest on its laurels after breaking a record that stood since 1929. Now virtually all producers have topped 1949 production totals, 15 individual makes have higher volumes for the first 11 months than in all last year. Even the Chrysler divisions have higher assembly totals this year than in the same 1949 period despite a three-month strike. Model changeovers are expected to drop December passenger car assemblies below the total a month earlier but truck outturn is due to be higher. Beyond Decem-

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	101.0	81.5	103.0	93.0
	Electric Power Distributed (million kilowatt hours)	6,909	6,716	6,574	5,881
	Bituminous Coal Production (daily av.—1000 tons)	1,567	1,508	1,896	1,591
	Petroleum Production (daily av.—1000 bbl)	5,755	5,825	5,910	4,979
	Construction Volume (ENR—Unit $1,000,000)	$484.9	$260.3	$101.9	$302.1
	Automobile and Truck Output (Ward's—number units)	159,862	152,107	161,009	52,514
	*Dates on request. †1950 weekly capacity is 1,928,721 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	730†	740	840	669
	Business Failures (Dun & Bradstreet, number)	170	160	135	191
	Money in Circulation (in millions of dollars)‡	$27,698	$27,543	$27,388	$27,699
	Department Store Sales (changes from like wk. a yr. ago)‡	−1%	−3%	none	−8%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$17,684	$13,009	$13,318	$13,902
	Federal Gross Debt (billions)	$257.0	$257.0	$256.7	$256.9
	Bond Volume, NYSE (millions)	$25.3	$21.0	$16.0	$20.7
	Stocks Sales, NYSE (thousands of shares)	11,813	12,212	7,827	8,780
	Loans and Investments (billions)†	$69.9	$69.7	$69.2	$66.8
	United States Gov't. Obligations Held (millions)†	$32,984	$33,306	$33,555	$37,248
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	167.67	157.76	157.76	152.52
	STEEL's Nonferrous Metal Price Index‡	242.2	240.7	244.9	162.4
	All Commodities†	172.6	171.7	170.0	151.2
	Metals and Metal Products†	183.3	180.6	180.6	167.1
	†Bureau of Labor Statistics Index. 1926=100. ‡1936-1939=100. ††1935-1939=100.				

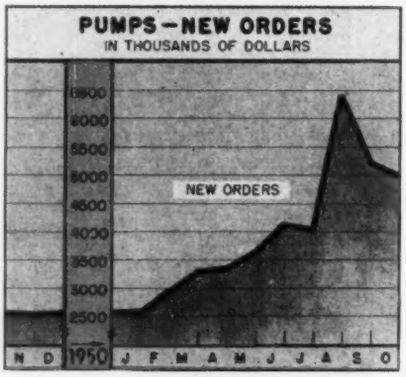


Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,299	305	753	436
Apr.	837	322	415	548
May	1,392	438	982	762
June	1,047	1,978	1,328	196
July	2,247	594	1,445	329
Aug.	3,927	706	1,039	589
Sept.	1,817	589	1,485	318
Oct.	2,306	269	1,603	565
Nov.	....	464	....	293
Dec.	....	718	....	281

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.

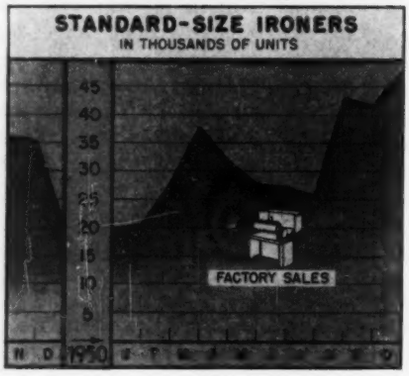


Pumps, New Orders

In Thousands of Dollars

	1950	1949	1948
Jan.	2,586	3,390	3,819
Feb.	2,938	3,247	3,635
Mar.	3,313	3,593	4,703
Apr.	3,376	2,699	4,312
May	3,668	2,775	3,724
June	4,153	3,019	3,512
July	4,080	3,358	4,075
Aug.	6,429	3,767	4,520
Sept.	5,191	2,914	3,474
Oct.	4,985	2,539	3,571
Nov.	....	5,525	3,580
Dec.	....	2,560	4,263
Total	....	36,386	47,188

Hydraulic Institute



Standard-Size Ironers

Factory Sales—Units

	1950	1949	1948
Jan.	20,300	28,300	40,192
Feb.	27,600	28,400	51,651
Mar.	37,800	23,800	53,686
Apr.	31,600	18,100	47,319
May	27,400	19,500	44,954
June	27,100	21,100	32,767
July	25,100	17,700	26,679
Aug.	42,700	32,300	35,203
Sept.	41,400	27,700	37,308
Oct.	47,500	36,045	38,517
Nov.	.....	35,000	42,000
Dec.	.....	19,400	26,000
Totals	.....	307,345	476,860

American Home Laundry Mfrs. Assoc.

Charts—Copyright, 1950, STEEL

ber production schedules are due to be cut back with schedules geared to extent of materials restrictions ordered by the government.

Public Work Predominates . . .

Heavy construction awards zoomed to the highest point ever attained in the week ended Dec. 7. The new peak is $484.9 million and tops the previous record of $435 million set in the week ended May 7, 1942, some of which was later canceled by the War Production Board. Public works reached $374.8 million in the latest week reported with the $260 million start on the H-bomb fuel plant in South Carolina and $33 million in awards for the New Jersey turnpike accounting for a large share of the total. Industrial awards were $51.2 million and were well above the weekly average for this year. Total awards for 49 weeks this year are up to $11.4 billion and are 46 per cent higher than in the like period a year ago.

Incomes Biggest Yet . . .

U. S. citizens earned more in October than in any previous month the Commerce Department says. Total personal income that month ran at a $230.1 billion annual rate and was $1.4 billion higher than the record set one month earlier. Increased payrolls by manufacturing companies and federal, state and local governments were the principal causes of the overall income rise. Farmers' incomes were also higher as were social security payments. All these increases more than offset a decline in corporate dividend payments.

Factory Hiring Rate High

Durable goods industries add workers at 60 per 1000 employed, reflect expansion

WORKERS continued to be hired at a rapid rate in October. Bureau of Labor Statistics estimates the accession rate was 53 per 1000 workers. This figure is down from a month earlier but is considerably higher than in October of either the two preceding years.

Hirings continued to lead separations by a significant margin. The factory quit rate made a seasonal decline to 27 per 1000 in October from 34 in September. Layoffs advanced slightly to 8 per 1000 employed but still made up only a minor proportion of all factory separations.

Durable goods industries hired workers at 60 per 1000 employed in October, reflecting the expansion in industrial activity but were slightly below September's 62 per 1000. The transportation equipment industry, with defense orders on hand or anticipated, stepped up its hiring rate. In nondurables the hiring pace slowed more sharply to 40 per 1000 from 46 in September partly due to seasonal factors.

The quit rate declined in virtually all manufacturing industries after the sharp seasonal rise between August and September. The layoff rate, though up slightly over the month, was only one-third the voluntary separation rate.

Steel's Overtime Costs Mount

Officials estimate that 25 or 30 per cent of the work being performed in Youngstown area steel plants is taking premium pay rates of time and a half or double time.

Now, 1000 men could be absorbed in Youngstown if they could meet specifications, says A. E. McCully, manager of the Ohio State Employmen Service. He says many employers will have to ease their specifications to use over-age or physically disabled men or some women to relieve the shortage.

Philco Books Big U.S. Orders

Philco Corp., Philadelphia, has a backlog of government business amounting to $60 million, says President Willian Balderston. Sales of all products this year will total $335 million, he believes, and may go to $345 million.

For next year Mr. Balderston predicts the first quarter will be pretty satisfactory, the second quarter will

be a conversion one and the third and fourth quarters will receive benefits of increased government billings. He is optimistic that Philco engineers will ultimately find substitutes for copper, cobalt, aluminum, etc. when these items become increasingly difficult to use in civilian products.

Since the company entered into the electric range field through the purchase of Electromaster Inc. in 1948, the Mt. Clemens, Mich., plant has been operating at capacity. Mr. Balderston says if the plant continues to operate at this level for another year, profits from this division will just about equal the original investment.

Timken Bearings Roll

Demand for its tapered roller bearings, alloy steels, tubing and rock bits is holding strong, reports Timken Roller Bearing Co., Canton, O., and earnings this year are likely to be the best in history. Backlogs for steel, tubing and rock bits are sizable assuring a high production rate well into 1951.

A cutback in automotive production could slow down the bearing division until defense orders would offset such a move. Increasing inquiries from railroads concerning use of Timken bearings in freight cars are a bright spot for this division. One railroad placed an order for 400 freight car sets of bearings and specified them for 500 more sets. Another road placed an order for 500 cars equipped with Timken bearings.

Sales in the fourth quarter are running at a level as good as or better than in the preceding three. Earnings without considering an uncertain tax picture will be about $17.2 million. Best previous earnings were $13.2 million in 1948.

Timken's major capital outlays for 1950 amounting to several million dollars are being applied to its new Bucyrus, O., plant which is expected to be in production early next year.

Backlog Hits $94 Million

Order backlog for Electric Boat Co., New York, on Nov. 30 was estimated at $94 million by President John Jay Hopkins. It is more than double the $40 million backlog reported on Mar. 31.

Principal effect of the new orders on the company's business will be felt after the current calendar year, Mr. Hopkins says. The last year has been largely one of new design tooling and preparation and sales volume while substantial will be below capacity.

Earnings, he adds, will be less than what the company would consider a normal annual profit. Work on the new orders will extend into 1952 under present production schedules which are subject to change. Electric Boat is currently engaged in both commercial and defense production. During the last war the company made submarines, submarine parts and motor torpedo boats.

Kelvinator Back in Production

Nash-Kelvinator Corp. recalled 4000 employees at its Detroit and Grand Rapids, Mich., plants last week. Refrigerator and range production was halted Nov. 22 by steel shortages. With the resumption of production, work was started on 1951 models. The model change coupled with continued material shortages will make it impossible to get up to previous output levels for some time, the company says.

TV Set Sales Top 6.5 Million

Television receiver production in the first 11 months aggregated 6,529,615 sets, estimates Radio-Television Manufacturers Association. The estimate covers output by member and non-member companies.

November radio and television outturn each dropped 8 per cent below the previous month's production. There were 752,005 television sets produced in November and 1,304,094 radios. Radio receivers, including home sets, auto radios and portables totaled 12,785,917 in the January-November period.

Capital Expenditures Climbing High and Fast

NEW plant and equipment expenditures for 1951 will be the highest in history, say the Commerce Department and the Securities & Exchange Commission.

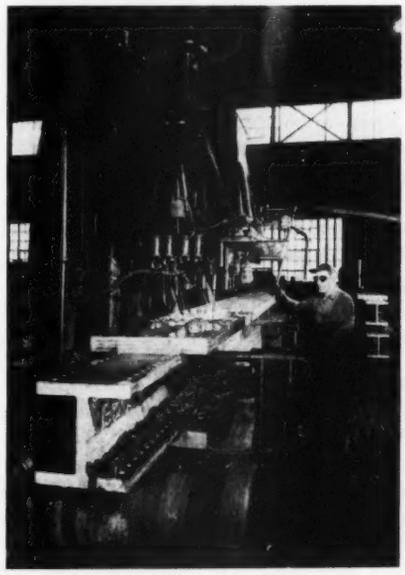
No figure is given for 1951 by the government agencies but they say outlays will be higher than they were in 1948 when the existing record of $19,230 million was set. Capital expenditures for 1951 were estimated at $21.6 billion by STEEL (Nov. 27 issue, p. 27).

Early Birds—As the government agencies see it, business men will start spending record amounts in the first quarter next year with an estimated $4.9 billion on the books. That sets a new high for any first quarter on record and after seasonal adjustment it sets a new high for any quarter. It will be 30 per cent higher than first quarter outlays in 1950 and all major industries will contribute.

For this year, the report says, outlays will about equal the $18.1 billion spent in 1949. Increased expansion in the second half makes the total possible. In the last six months plant and equipment additions cost $10.1 billion or 12 per cent more than in the second half of 1949. In the first half this year capital outlays trailed the like period in 1949 by 12 per cent. Despite higher cost the physical amount of capital expenditures is expected to be considerably higher in 1950's second half than it was in the same period a year ago.

You Did It—Manufacturing expansion accounted for almost all the increase in capital expenditures during the second half. It increased from $3.5 billion in the last six months of 1949 to $4.6 billion in the like period this year. Manufacturing companies and utilities are the only business categories that spent more for expansion this year than last.

Should many companies get favorable treatment in their quest for rapid amortization under terms of the Defense Production Act, capital expenditures will get off to a flying start next year. Some companies are watching to see the treatment that will be given to requests now pending before launching their own programs which need rapid amortization to be economically practical.



BUILDING BACKBONE: This steel column for Aluminum Co. of America's new downtown Pittsburgh skyscraper is being worked on by a drill operator at the Ambridge, Pa., plant of U.S. Steel's American Bridge Co. The 15-ton column is 32 feet long and will be part of the new building's backbone

Men of Industry

WALTER C. FOOTE
. . . Dearborn Gage sales manager

WALTER K. GRANT
. . . Continental Foundry chief elec. engr.

P. W. PHENEGER
. . . assumes purchasing direction, Superior Steel

Walter C. Foote was appointed sales manager, **Dearborn Gage Co.,** Dearborn, Mich. With a background of both engineering and sales, Mr. Foote will assume active direction of the company's expansion program for distribution and sales of Ellstrom chromium plated gage blocks and other allied quality-control and precision measuring equipment.

James W. Brooks has assumed sales and engineering responsibilities for **Lincoln Electric Co.** in the Indianapolis district. He was transferred from the Boston district. **Thomas L. Dempsey** was added to the staff of the company's Cleveland sales organization as a special field engineer. In addition to duties as sales engineer he has a special assignment of giving engineering service to manufacturers in the Cleveland area who are redesigning machinery for welded steel fabrication. **John F. Kotchian** is now serving industrial accounts for Lincoln Electric as a welding engineer in the Chicago district.

Roy C. Ingersoll, president, Borg-Warner Corp., Chicago, was elected a director of **Kelsey-Hayes Wheel Co.,** Detroit.

John W. Pennington, former staff engineer for Caterpillar Tractor Co., was named chief engineer of the piston ring department of **Koppers Co. Inc.,** at Baltimore. In his new position Mr. Pennington will be responsible for design and metallurgy of Koppers' American hammered piston rings; all shop and field testing; supervision of research activities; and customer contacts of an engineering nature.

Walter K. Grant was appointed chief electrical engineer, **Continental Foundry & Machine Co.'s** rolling mill and special equipment division in Pittsburgh. Formerly with United Engineering & Foundry Co., Mr. Grant went to England in 1936 to assist in construction of hot and cold strip mills for Richard Thomas Co. After completion of the mills he remained in England for several years as chief electrical engineer of the Thomas company, then returned to the United States in 1942.

Glen McDowell, formerly roll sales manager, Aetna-Standard Engineering Co., has joined the roll sales force of **Lewis Foundry & Machine Division,** Blaw-Knox Co., Pittsburgh. Other appointments in the division include: **W. B. Hackett,** appointed assistant to the president in charge of engineering; **C. W. Baker,** appointed manager, contract engineering; **A. C. Fisher,** appointed manager, sales engineering and service; and **G. T. Andrews,** appointed manager, machinery sales.

Edward A. Livingstone, vice president in charge of sales, **Babcock & Wilcox Tube Co.,** Beaver Falls, Pa., was named to the Steel Products Industry Advisory Committee to advise in the administration of the Defense Production Act as it affects the iron and steel industry.

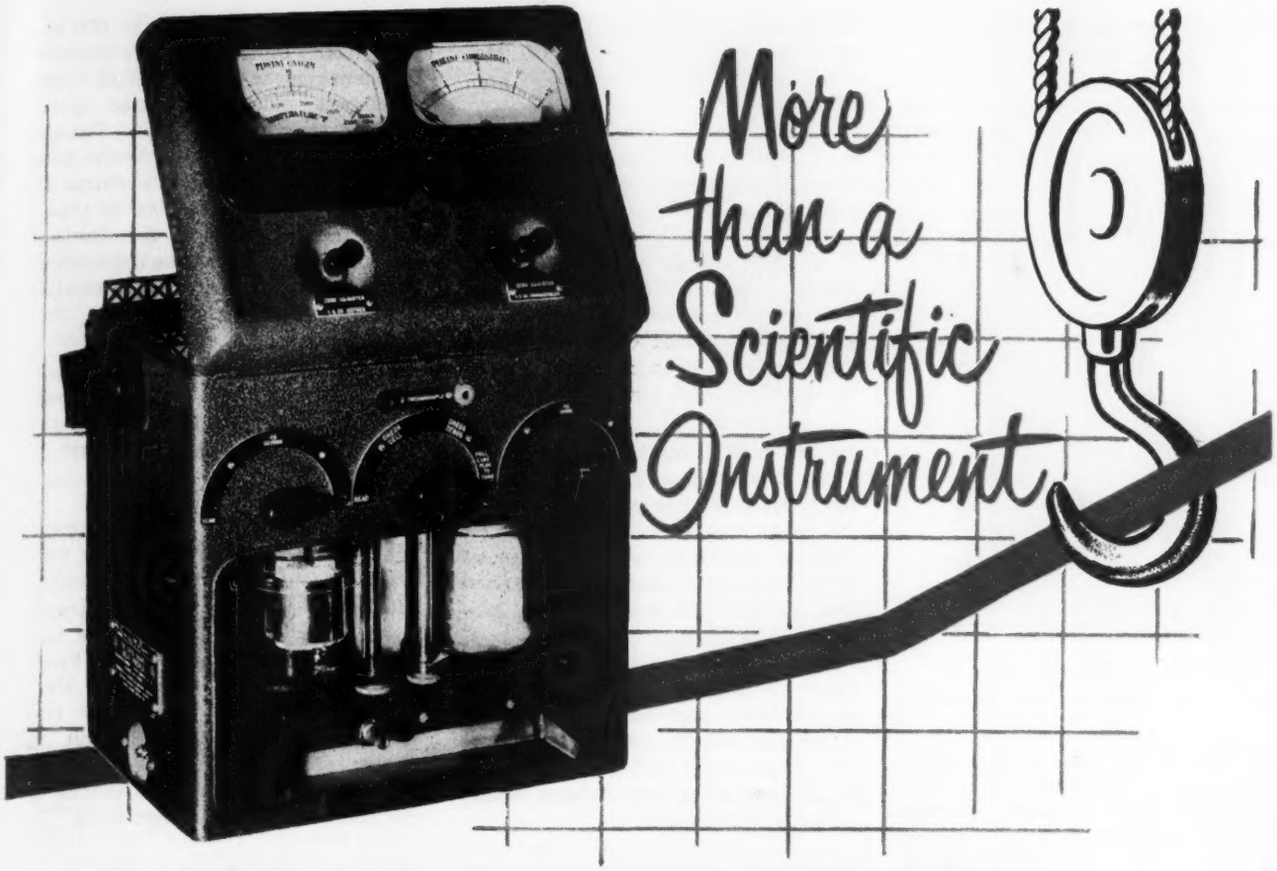
Ray O. Ryan, manager of the Ft. Worth, Tex., plant of **Consolidated Vultee Aircraft Corp.,** San Diego, Calif., was elected vice president in charge of manufacturing for the company. He is succeeded in Ft. Worth by **August C. Esenwein.**

P. W. Pheneger, assistant to the president, **Superior Steel Corp.,** Carnegie, Pa., will also assume direction and responsibilities of the company's purchasing department, succeeding the late **J. W. Schultz. John C. Zuk** was named assistant purchasing agent.

To fill the vacancy left by the death of **Harry V. Snyder,** factory manager, **Raybestos-Manhattan Inc.'s** Manhattan Rubber Division, Passaic, N. J., the following new appointments were announced. **R. J. Gorecki** was named factory manager; **W. E. Perkins,** assistant factory manager; **D. J. Fenelon,** director of labor relations; **R. Griffith,** personnel manager; **J. Freeland,** manager, cord belt department; and **A. P. Schneider,** superintendent, cord belt department.

Ekco Products Co., Chicago, appointed **Walter Lueneburg** chief engineer of its Diamond Silversmiths Division at Lambertville, N. J. He was assistant chief engineer at the main plant in Chicago. He joined Ekco in 1942 and was responsible for engineering and tool design on cartridge cases and machine gun links during the war. Before that he was assistant to the chief engineer at Tropic-Aire Co. in charge of passenger car heater design.

E. A. Erickson was appointed manager of the Hornell, N. Y., plant of **SKF Industries Inc.** Mr. Erickson, associated with the company for 38 years, has been shop superintendent since 1947 when a plant was acquired in Hornell for production of pillow blocks, and operations of the cast iron division were moved there from Philadelphia. **Harry R. Fillmore** was



A HOIST FOR YOUR PRODUCTION CURVE

Are you wasting furnace fuel? ☐

Is excess (scale-making) oxygen present? ☐

Are you paying needlessly to heat excess air? ☐

Facts that answer these vital questions are promptly supplied by the Cities Service Heat Prover. This exclusive flue gas analyzer strictly checks combustion factors. Then sources of loss can be traced and corrected. Operators of all types of furnaces report they have been able to clamp down on cost and step up production, simply by using the Cities Service Heat Prover. Find out how easily you can arrange to put it on the job. Send the coupon.

A complete line of petroleum products for the Metal Fabricating Industry including:

- ★ Chillo Cutting Oils
- ★ Trojan Greases
- ★ Trojan Gear Oils
- ★ Pacemaker Compressor Oils
- ★ Pacemaker Hydraulic Oils
- ★ Optimus Cylinder Oils
- ★ Q-T (Quenching & Tempering) Oils
- ★ Tableway Lubricants

⇩ This coupon brings complete details in your copy of "Combustion Control for Industry."

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

CITIES SERVICE OIL CO.
Sixty Wall Tower, Room 775
New York 5, New York

Please send me without obligation, a copy of "Combustion Control for Industry."

Name_____

Company_____

Address_____

City_____ State_____

advanced from general foreman to assistant plant manager.

Alexander Zeitlin was appointed vice president of **Hydropress Inc.,** New York, and **Loewy Construction Co.**

ALEXANDER ZEITLIN
. . . V. P. Hydropress and Loewy Construc.

Inc., New York. The Loewy group is engaged in the new rolling mill and heavy press program initiated by the U. S. Government and various industrial firms. Mr. Zeitlin will be in charge of the new program.

John Feeser was named manager of the new branch store and warehouse in Columbus, O., of **Burdett Oxygen Co.** Located at 325 Short St., the branch will carry a supply of oxygen, acetylene and other industrial gases, as well as a stock of welding and cutting equipment and safety supplies.

S. B. Fuerst was appointed supervisor of methods and equipment, Fitchburg Works, **General Electric Co.,** Schenectady, N. Y. **Leon C. Swager,** assistant to works manager, has assumed responsibility for wage rate administration in GE's Fort Wayne, Ind., Works to succeed **C. H. Weber,** retired.

George L. Bachner, president of **Powered Metal Products Corp. of America,** Franklin Park, Ill., was appointed industrial consultant to the chief of ordnance, U. S. Army. In an advisory capacity he will pass on suitability of powdered metal fabrication for specific ordnance requirements.

Richard T. Purdy was appointed Washington representative of **Nash-Kelvinator Corp.,** Detroit. The Washington office was established to maintain contact and assist in shaping future programs to meet national requirements of government defense plans and policies. Mr. Purdy will have headquarters in the Nash Motors' Washington offices at 1840 Fenwick, N. E.

P. F. McEvoy has joined **Industrial Process Engineers,** Newark, N. J., as vice president.

V. C. Carr, auditor and assistant secretary, Adamson-United Co., Akron, was transferred to the Youngstown plant of the parent company, **United Engineering & Foundry Co.,** and **Mark M. Wolff** succeeds Mr. Carr at Akron.

Double Seal Ring Co., Fort Worth, Tex., appointed as sales representatives **Alton J. Fabrey,** in charge of the eastern part of New York state; **Clifford J. Lane,** western part of New York state; and **C. H. Garrison Co.,** Kansas and southwestern Missouri.

Walter J. Auburn was named director of purchases, and **Kenneth A. Smith,** purchasing agent for **Gerrard Steel Strapping Co.,** Chicago, subsidiary, U. S. Steel Corp. Mr. Auburn is also advertising manager.

Leonard L. Robb, who joined **Stewart-Warner Corp.,** Chicago, in 1928, was appointed assistant to **James S. Knowlson,** president and board chairman of the company. Since 1942 Mr. Robb has been production control manager of the lubrication equipment and automotive accessory division.

A newly created employee-public relations office at **Kearney-Trecker Corp.,** Milwaukee, will be headed by **Alphons J. John.** He continues as advertising director.

Fairbanks, Morse & Co., Chicago, appointed **C. G. Gehringer** as manager of its branch house located in Louisville. He joined Fairbanks-Morse sales organization in 1936 and in 1938 was assigned as a field engineer in Columbus, O.

George A. Hinckley was appointed sales manager of the New York factory branch office of **Automatic Transportation Co.** Mr. Hinckley, who has been with the manufacture of electric industrial trucks for several years, moves to New York from the home office in Chicago. His most recent assignment was with the sales department at the factory.

W. J. Delehanty was appointed manager, wire and cable plant, Oakland, Calif., for **General Electric Co.'s** Construction Materials Wire & Cable Division, Bridgeport, Conn. In this capacity Mr. Delehanty is responsible for management of engineering, manufacturing, and commercial operations of the Oakland plant. His assignment was made concurrently with announcement by Vice Presidents **C. C. Walker** and **H. V. Erben** of transfer of management of the Oakland plant from the apparatus department to that of the construction materials department.

Milton Hegeman was appointed acting plant manager, Library Bureau Division, **Remington Rand Inc.,** Herkimer, N. Y. He succeeds **Robert E. Treskow.**

John A. Curtis was appointed manager of the newly formed Power Ballaster Products Division of **Pullman-Standard Car Mfg. Co.,** in Chicago. Heading up three district sales territories for the Power Ballaster Products Division are: **George W. Morrow,** in charge of the central and southern district; **John B. Bell,** in charge of the northeastern district; and **Robert C. Caldwell,** in charge of the south and southwestern sales.

Frank Breckenridge, formerly executive vice president, was elected president of **Automatic Washer Co.,** Newton, Iowa. He succeeds the late **W. Neal Gallagher. Horace S. Valle,** Chicago management consultant, was elected a director.

John J. Golden was appointed assistant to the vice president-steel production, **Carnegie-Illinois Steel Corp.,** Pittsburgh. He transfers to the company's general offices in Pittsburgh from Chicago, where he has been employed continuously since he started as a clerk in the open hearth shop at South Works in 1911. Since 1940

JOHN J. GOLDEN
. . . assists a V. P. at Carnegie-Illinois

Mr. Golden has been division superintendent in charge of steel production at **Gary Steel Works.**

Capitol District, **Institute of Scrap Iron & Steel Inc.,** Washington, elected **Leonard C. Klein** as president to succeed **Philip Sher.** Mr. Klein, connected with Joseph C. Klein Inc., Albany, N. Y., was vice president. The new vice president is Herman Garbowitz, Samuel Garbowitz & Son, Schenectady, N. Y.

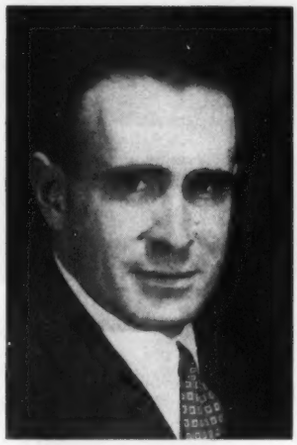
Reliance Steel Co., Los Angeles, appointed **L. H. Stringfellow** as sales manager. He has been with the company for seven years as a salesman.

Leslie Allman has been promoted to executive vice president of **Fruehauf Trailer Co.,** Detroit. He joined the company in 1929 to take charge of advertising and public relations. In 1939 he was made a vice president and three years later a director. He also is president of Truck-Trailer Manufacturers Association.

George Romney, vice president, **Nash-Kelvinator Corp.,** Detroit, was named a director of Kelvinator of Canada Ltd., a subsidiary.

Industrial Filter & Pump Mfg. Co., Chicago, appointed **A. Tonkonogy** as metropolitan New York district sales representative.

E. B. Cleborne, president of **Allegheny Ludlum Steel Corp.,** Pittsburgh, and **Frank B. Lounsberry,** vice president and technical director, will retire Jan. 1. New officials will be elected at the regular meeting of the board of directors on Dec. 21.



HENRY D. SHARPE JR.
. . . vice president at Brown & Sharpe

PAUL R. HATCH
. . . named asst. sec'y, Brown & Sharpe

Henry D. Sharpe Jr. was elected a vice president, **Brown & Sharpe Mfg. Co.,** Providence, R. I., and **Paul R. Hatch** was named an assistant secretary. Mr. Sharpe joined the company in 1946 following three years of active duty in the Navy. Following completion of a two-years training course he was assigned to the administrative offices. He was elected an assistant secretary in 1948 and a director in 1949. Mr. Hatch has been identified with the sales department since his employment with the company in 1927. He was made head of that department in 1947, and in addition to his new office, continues to direct company sales. **Herbert Richardson,** who has been with the Philadelphia office, was placed in charge of the Hartford, Conn., office to succeed **Julian G. Tabor** who has held that position since 1920 and retired after 45 years' service. Mr. Tabor served in the shop and sales department before going to Hartford. Henceforth the sales of all products of the company in Connecticut, including small tool items, will be handled by the Hartford office.

The St. Louis Chapter, **Institute of Scrap Iron & Steel Co. Inc.,** elected the following officers for one-year term: President, **Sidney Grossman,** Grossman Iron & Steel Co. Inc.; first vice president, **George Gillerman,** Gus Gillerman Iron & Metal Co.; second vice president, **Sol Mack,** Frank Mack Co.; third vice president, **Leonard Bierman,** Bierman Iron & Metal Co. Inc.; secretary and treasurer, **Alvin Barnett,** Steel Baling Co.; and chairman of the executive committee, **Sam Lefton,** B. Lefton & Sons Iron & Metal Co.

Maurice R. Graney was appointed superintendent of training, Indiana Harbor Works, **Inland Steel Co., Chicago.**

Francis X. Ferguson was appointed assistant eastern district manager, **A. Shaw Co. Inc.,** Pittsburgh.

OBITUARIES . . .

Harry V. Snyder, 56, factory manager, Manhattan Rubber Division, **Raybestos-Manhattan Inc.,** Passaic, N. J., died Dec. 2 at Point Pleasant Hospital, Point Pleasant, N. J.

William O. Taylor, 72, who retired two years ago as an export division manager, **Allis-Chalmers Mfg. Co.,** Milwaukee, died at his home in Urbana, O., Dec. 1. Employed by the company for 42 years, Mr. Taylor went to Milwaukee from the New York office in 1934 to form the tractor division's export department, and remained head of the department until his retirement.

Dr. George Zirker, 53, formerly chief metallurgist with **Burndy Engineering Co. Inc.,** New York, and a pioneer in development of titanium and titanium alloys in Germany and the United States, died Dec. 5 in New York.

Harry F. Ernest, 61, treasurer of **Peerless X-Ray Laboratories & Mfg. Corp.,** New York, died Dec. 5.

Clifford B. Cornell, 63, assistant personnel director, **Chrysler Corp.,** Detroit, died Nov. 30 of a heart attack. He had been with Chrysler for 25 years.

Alex Zeeve, president, **A. Zeeve & Co.,** New York, manufacturer of machinery and steel dealer, died Dec. 4.

Sparrow E. Purdy, 64, chairman of the board of **Purdy Co.,** Chicago, scrap broker and railroad and construction equipment firm, died Dec. 6 in his home in Long Beech, Ind. He founded the Purdy Co. in 1945 after resigning as head of Hyman-Michaels Co., also a rail-equipment firm.

William B. Magnuson, 53, engineer, **Champion Foundry & Machine Co.,** Chicago, died Dec. 1 following several years of ill health. He had been associated with the company 32 years.

Abraham J. German, 71, former chief engineer, **Scovill Mfg. Co.,** Waterbury, Conn., and an authority on steam power, died Dec. 2.

Richard B. Proudfoot, 37, assistant general superintendent in charge of casting and electroplating at **Cleveland Graphite Bronze Co.,** Cleveland, died Dec. 10. He was associated with the company for 15 years.

SERVING and SAVING

ALL INDUSTRY

Like hundreds of other manufacturers, you, too, can save money if American Welding makes your rings, bands and welded products.

Included in the thousands of products we supply to other manufacturers are parts for jet engines and airplane motors, refrigerators, generators, electric motors, road building equipment, and material handling equipment, to mention just a few.

We believe we can save money for you. Designers, engineers, and metallurgists are ready to work with you and for you. All types of resistance and fusion welding equipment for working with ferrous and non-ferrous metals and alloys are available, as well as heat-treating and machining facilities.

We'll be happy to apply a third of a century's experience to your requirements. Send us prints and specifications for prompt action.

SEND FOR YOUR COPY OF OUR NEW 20 PAGE CATALOG

THE AMERICAN WELDING & MANUFACTURING CO. · WARREN, OHIO . . . 110 DIETZ ROAD

Production AND Engineering
NEWS AT A GLANCE

AIRCRAFT METHODS FOR BUSES—Back in the war years (the second big one, that is) there used to be a lot of verbal interchange between aircraft and automobile manufacturers. On the one hand the aircraft boys were fuss-buttons when it came to metalworking, while on the other the auto people were "butchers". Eventually each group admitted to have learned a lot from the other and so today you see aircraft techniques such as rotary contour forming used in the manufacture of motor coaches (p. 94) in the midwest, with the result that complicated structural shapes can be formed in a single piece, and the need for separate bodies and chassis just about eliminated.

COMES UP LIKE MERCURY—Do not be alarmed if unused oxygen cylinders stored outdoors these cold days register pressures of less than 2200 pounds. The oxygen hasn't been lost—it's still in the cylinder. It acts like the mercury in a thermometer. Oxygen cylinders are filled at the charging plant to a pressure of 2200 pounds per square inch at a temperature of 70° F. When a full cylinder stands outdoors with the temperature at 20° F, the pressure may be only about 1900 pounds per square inch—but the full amount of gas is still there.

INTO THE WIDE BLUE YONDER—Where the jets roam at 70,000-foot altitudes and at temperatures of 100 below there are many unprobed riddles of what happens to engine metals and components. So a vital part of General Electric's elaborate new jet-building center in Massachusetts (p. 98) is a laboratory where it is hoped some of the conditions of the upper air can be simulated. Components rather than complete engines are the principal subjects, in order that fundamental data can be ferreted out more quickly.

DRY ROLLS HIGH-SPEED TOOL STEEL—Special copper-moly cast alloy steel roll now manufactured by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., for dry rolling high-speed tool steel, is reported to be the only commercial roll known that makes it practical to reduce this type of steel from ingot to billet by rolling instead of by hammering and forging. Because of its heat dissipating qualities the roll needs no water coolant. The company says the roll's hot working action makes possible the processing of high-speed tool steel some five times faster than the hammering method.

POLISHING IRREGULAR CONTOURS—Relative newcomer in the abrasive field is the brush-backed sander head (p. 100) with inserted strips of shredded abrasive which can adapt themselves to irregular contours of work. It has been used in woodworking but rarely in metal, and is primarily for finish rather than stock removal. Pattern is satin finish instead of the straight-line scratch of the polishing belt. No adjustment is needed for contour of the part.

PUTS CHORE ON "SKIDS"—Problem of handling and overhauling diesel-electric locomotive batteries in the Erie Railroad shop at Marion, O., was literally placed on the "skids". The shop devised special skids that now make it easy to "unload" battery locomotive boxes. Height of each skid, which is the same as the distance from the floor to the battery box, also places the battery it holds at a convenient height for servicing. The skids are of ½-inch welded steel plate. To provide necessary stiffness, and at the same time allow for handling with a lift truck, the skids have a second horizontal plate, 3½ inches below the deck plate. Four flanges on the deck plate keep the battery from sliding off.

POOSH 'EM UP DA SCRAP—Handling of scrap from storage pile to open-hearth furnaces (p. 114) is accomplished now in about half the time formerly required, at Armco's enlarged shop in Middletown, O. Four scrap boxes are loaded on a buggy which is spotted over a hydraulic elevator at ground level. In 25 seconds 45,000 pounds of material is raised 20 feet to charging level, the platform turning 90 degrees in its upward movement so the cars can be rolled onto tracks for handling by conventional charging machine. Empty boxes and cars descend on an adjoining elevator.

AT THE LIMIT?—Inferior physical characteristics of magnesium alloys at elevated temperatures have led engineers to predict their usefulness in primary aircraft structures for flights at supersonic speeds already may have reached a limit. These predictions seem reasonable only if it is assumed no progress is likely to be made in the metallurgy of magnesium alloys, which is hardly likely. However, an engineer in the Langley Aeronautical Laboratory of the NACA says that until a means of preventing high skin temperatures is developed, the principle of the stressed-skin aircraft structure will fare poorly at and above the middle supersonic speed range, particularly in the case of magnesium alloys which show such great losses in strength and stiffness at even moderate temperature increases that the nominal advantages of the metals are soon lost. Techniques are being studied to overcome the difficulty, such as double skins, artificial cooling and others.

Bath machine forms a 63ST-4 aluminum wheelhouse angle. This part involves a reverse curve, with three radii in the horizontal plane and five in the vertical

Contour Forming Speeds Bus Body Fabrication

Advanced manufacturing methods borrowed from the aircraft industry simplify construction of strong, light coach bodies. Structural members formerly made in two or more sections and joined are now shaped in one piece, saving weight, fabricating and assembly time

AIRCRAFT fabrication techniques are being successfully adapted to bus and coach body building. By using the same type machine that forms airplane wing and fuselage sections Marmon-Herrington, General Motors and Oneida Products are getting greater strength with less metal, as well as faster assembly.

Side posts, roof columns, wheelhouse angles, carlines, window posts, rub rails are now being shaped on rotary contour formers built by Cyril Bath Co., Cleveland. As used by Marmon-Herrington, rotary contour forming methods are reported to have made possible complete elimination of chassis.

Lighter but Tougher—The machines produce in one piece structural parts formerly made in two or more sections and joined together. One typical part, a wheelhouse angle, involves a reverse curve, with three radii in the horizontal plane and five in the vertical plane. For bus and coach bodies this method means fewer and lighter structurals. The bodies weigh less and yet meet the severe test of carrying three times normal load in service, Marmon-Herrington claims.

The contour former consists basically of a variable speed, power driven circular table and a double-action, pressure controlled cylinder. Forming is done by stretch or compression methods, or both.

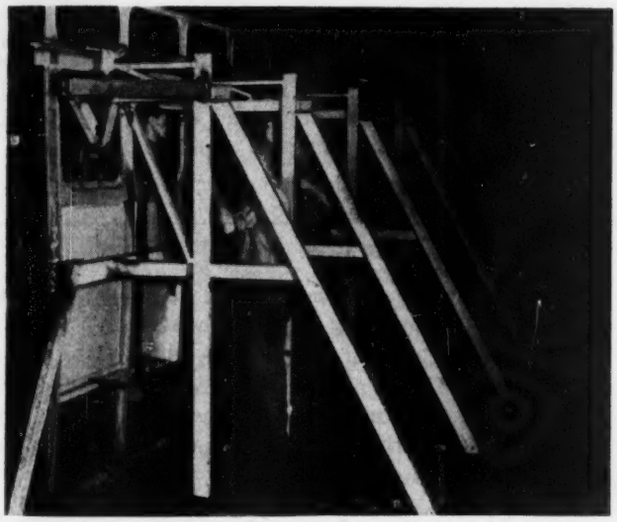
For stretch forming, the material is secured in gripper heads mounted on the cylinder ram face and on the table. The cylinder pull-stretches the metal to approximately its elastic limit. Then the table revolves at a predetermined speed, laying the material on the form or die mounted on the table.

Compression forming does a particularly good job on sharp curves. Soft steel is formed by reversing the process. The cylinder is locked parallel to the machine bed and pressure directed toward the center of the table.

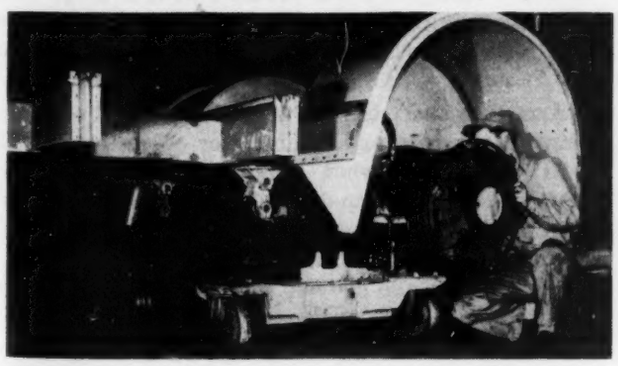
The material is positioned against the die, and shoes or rollers on the ram force the material against the die. As the ram exerts pressure, the table revolves to "iron" the material around the die.

Chassis Out—In the construction of 349 forty-four passenger trolley coaches recently ordered by the Chicago Transit Authority, Marmon-Herrington will

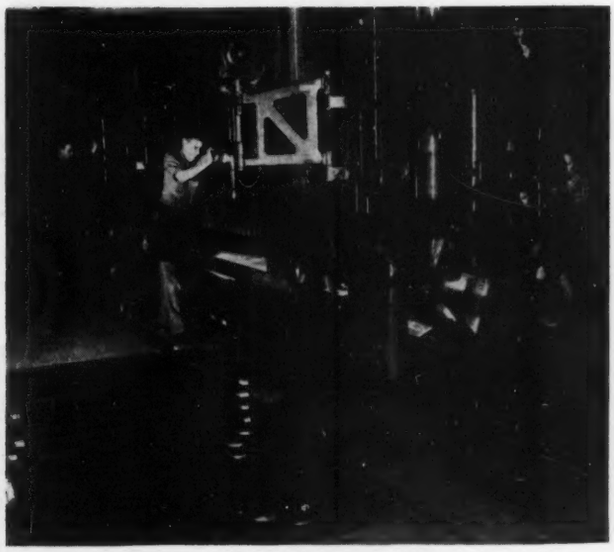
Structural member of Marmon-Herrington trolley coaches formed from Z-shaped aluminum alloy extrusions. This part is shaped at the rate of 80 pieces per hour



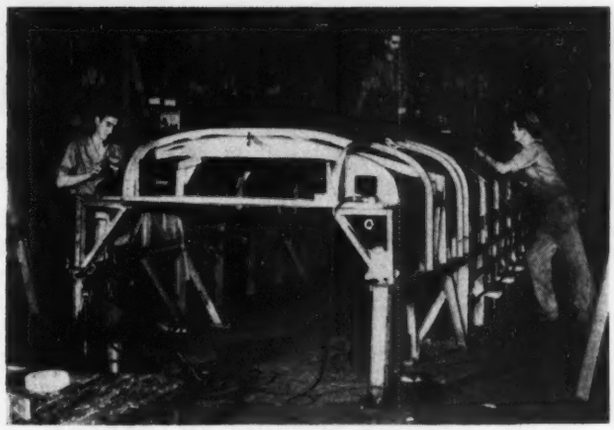
End view shows side jig with workman assembling a side frame of the coach body



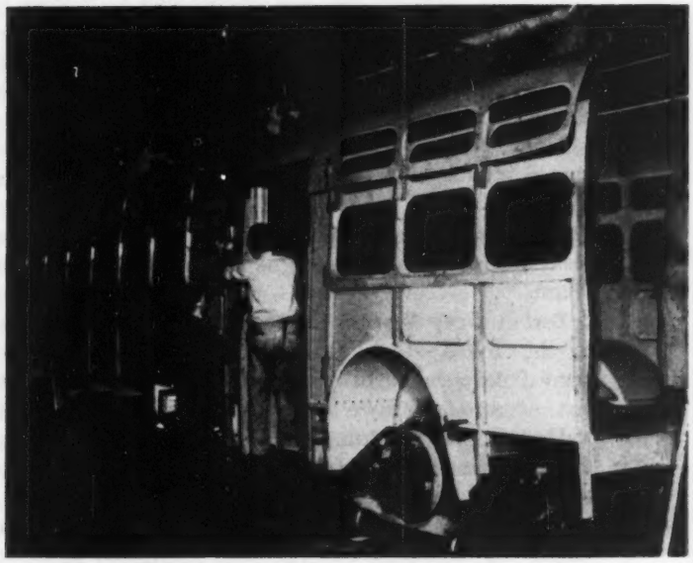
Axle and spring assembly are being assembled on the underframe



Workman jig drilling continuous center members that are used in the underframe structure of Marmon-Herrington coaches

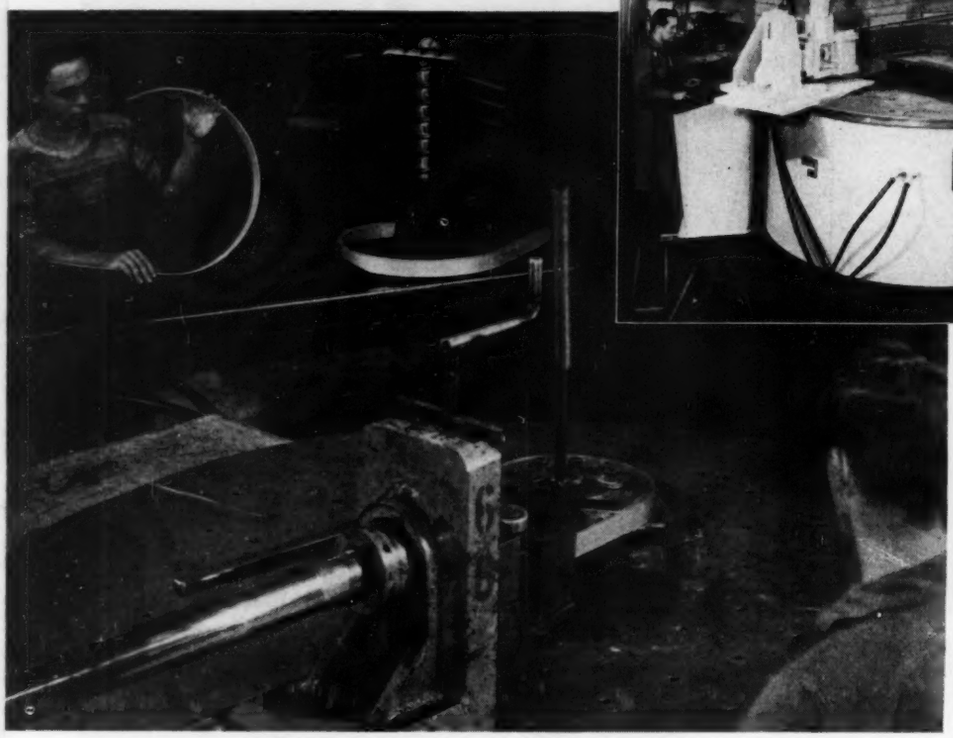


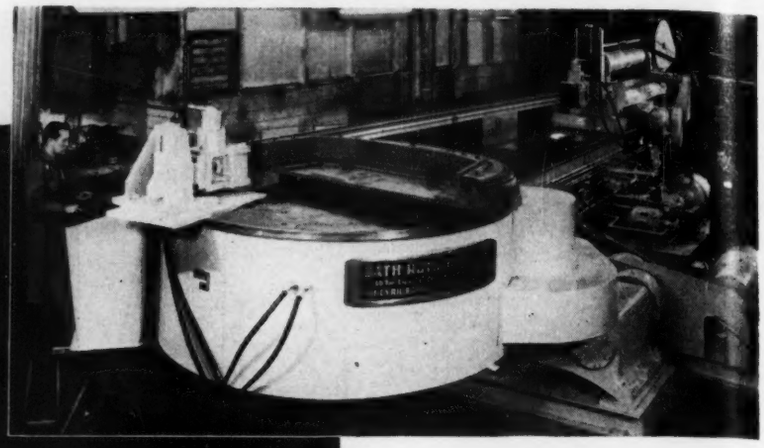
Workmen jig-assemble the roof structure



Roof assembly installed on body side frame assembly

Right—Fifty-ton rotary contour former now in operation at Boeing Aircraft, Seattle





Left—Contour forming one of a series of 24 sizes of taper shrouds for jet engines. Extreme accuracy is required in flatness, angularity and contour. Part is tapered so that dimensions of upper and lower diameters are different. Some parts made of 3½-inch stainless are as much as 30 per cent larger on upper diameter than on lower. This requires a combination of stretch forming and compress forming. Various sizes are formed at rates from 60 to 120 pieces per hour

use a radically new design, eliminating the conventional heavy chassis.

Through the use of contour-formed parts, the coach body itself will be strong enough for direct attachments of motor, axles and other operating parts. This will reduce the weight of each coach approximately 2½ tons, equivalent to the weight of about 33 passengers. So, the new coaches will actually weigh less with an average load of passengers than most prewar coaches weighed when empty.

Improvements Feature DC Motor

Accessibility and protection are features of the new type SK direct current motor being introduced by Westinghouse Electric Corp., Pittsburgh. The rear bracket is solid on top and covers can be added to the front bracket and lower opening of the rear bracket to provide any degree of protection desired, from dripproof to dripproof protected and totally enclosed.

To facilitate removal, the covers use specially-designed stainless steel springs to snap it in place. Inspection is easy, there being no screws to lose or threads to damage. Soft rubber gaskets cemented to the cover provide a tight fit between cover and frame.

Bell is Deep Drawn—Motors continue to make use of the rolled steel frame, but steel brackets have been incorporated in the new design. Motors consist of a deep-drawn heavy steel bell, to which is welded a bearing hub. Larger motors make use of a heavy flange at the frame fit, this providing a rigid bracket.

Prelubricated bearings are used throughout the motor, the company reports. An additional improvement has been made in brush rod insulation, a molded Melamine rocker ring being used to hold and insulate the rod supporting the brushholders.

This insulating material of high dielectric strength is said not to carbonize when current flows across its surface. If a ground should occur due to dirt or carbon, the rocker ring's insulation is restored by merely wiping off the dirt.

No Shorts—Field coils may be separated individually, all being separable from the poles. The shunt and series fields are separable from each other. New coils are made of Formvar wire, with a tough multiple coat of synthetic enamel, reported to provide additional protection against shorts that cause many coil failures.

Armature shaft is removable, having a sleeve used between the core and commutator to maintain their relative positions when removing the shaft. Commutator uses the deep-drawn bar section with a thick body to provide many resurfacings. Core is of electrical grade insulated steel laminations, with ventilating ducts in the body to provide adequate cooling.

Coils are held in the slot by shaped slot wedges. The armature coil retains the mica wrapper for ground protection, but has added pieces of insulation on the vulnerable parts of the coil.

SEEN AND HEARD IN THE Machinery Field

By GUY HUBBARD
Machine Tool Editor

GEARS AND "HOLE ENGINEERING": Some of my most interesting plant visits lately have been with designers and builders of precision gear cutting and finishing machines and tools. I grew up as a neighbor to several pioneers in this field and always have looked up to them as master minds and master craftsmen at translation of mathematics and geometry into machinery details upon which we have come more and more to depend.

As time has gone on, these gear men never have ceased to improve their machinery and their methods to keep pace with new theories, new materials, new heat treating methods and to meet new demands for quiet operation and concentration of power-carrying capacity into unbelievably small space.

One of the biggest headaches that these gear machine and tool experts have suffered, have been due to mistreatment of gears in mounting and installation. Too often, all the exact science and precision machining that has gone into gear tooth design, forming and finishing has been nullified by misalignment and inaccurate meshing due to sloppy machining of gear cases and other supporting members.

When the disgruntled ultimate user has complained to the mechanism manufacturer; he in turn has blamed the gear maker; who in turn has blamed the makers of the gear cutting tools and machines—who are the very ones who were not to blame. Nevertheless, they are the men who have had to go to the trouble and expense of tracing down and recommending cures for troubles due to faulty hole techniques. In other words, it has been customary to consider gear machine and tool builders guilty, until they have proved themselves innocent.

Therefore, it is quite understandable why I find so many of my good friends among the gear machine and tool builders showing lively interest and enthusiasm in recent achievements of fellow machine tool builders in the realm of precision hole spacing, drilling, boring, reaming, grinding and lapping.

With widespread introduction of recently developed production equipment such as spacing machines which exactly reproduce accurate patterns of accurate holes, and boring machines which exactly match mating patterns of holes on opposite walls of gear cases, gear machine and tool men now have high hopes that their days as "whipping boys" for the gear-using industries are over.

It certainly was high time that something was done about this. If the "hole engineering" members of the machine tool industry had not come through as they have, I believe that the gear machinery group would have gone into "hole engineering".

FIXTURE INVENTIONS: For some reason the plain Yankee name "inventor" seems to be out of favor lately. Men who formerly would have been classed as "inventors", today are called engineers, experts, technicians, creative designers, researchers, etc. To me the word "inventor" has more character and more force—in that it brands a person with rare ability to "pick useful ideas out of the blue" so to speak.

Among the people who in my estimation are most deserving of this honorable title "inventor", are those who dream up the elaborate and highly ingenious fixtures which are built onto—or built into—modern production machine tools. In many cases these fixtures are far more complicated, and sometimes even more expensive, than the boring machine or lathe or other basic machine tool with which they are associated.

Unlike the basic machine, these fixtures (or jigs as some of them also might be called) are designed around a specific piece of work. Among their important requirements are: Easy workability by relatively inexperienced operators; ability to grip and hold work firmly and in exact relation to cutting tools, and to release it quickly when machining has been accomplished; insurance against gripping work wrong side to or upside down, and ample clearance for chips.

Unlike its basic machine tool, the fixture is apt to be a "one-time shot", in that another one exactly like it may never be built. That makes its original invention a rather expensive process in that a lot of creative brainwork properly should be charged up against a single order. If that is not done, the machine tool builder is not being a good business man. Intangible though it may be, inventiveness is a commodity which should not be sold short.

Successful machine tool builders now recognize this kind of inventiveness as "inspiration to inspiration". By keeping drawings and complete photographic records of each of these special setups in ready reference form, they soon find themselves in possession of a valuable asset which stimulates sales to fully as great a degree as it stimulates inventiveness.

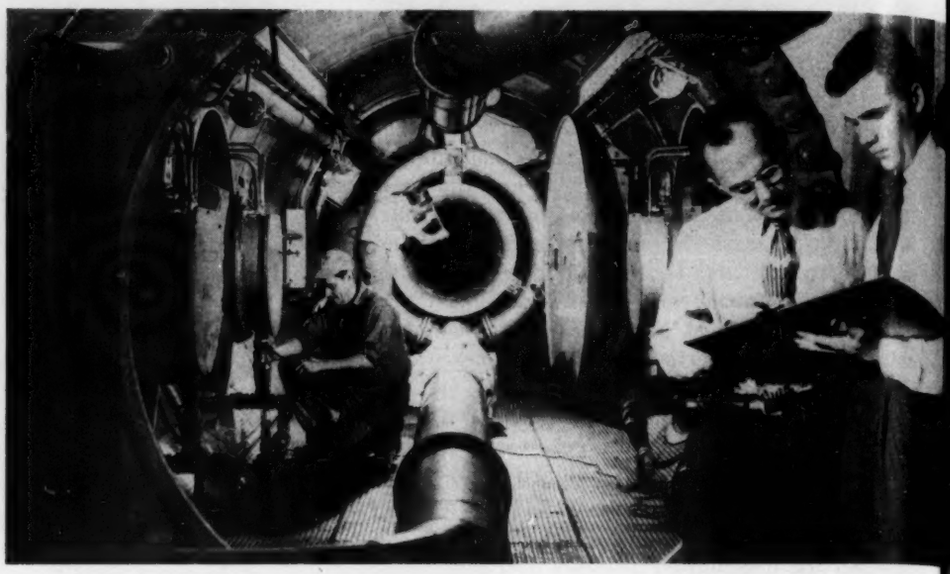
What happens in such cases is that when a prospect "takes a look at the record"—with the able assistance of a creatively imaginative salesman—he is very apt to discover that an effective method of handling a part similar to his, already has been worked out for someone else. Having aroused his interest to that extent, the live-wire salesman immediately gets the "invention department" busy on a modification of the previously designed fixture for the new application.

This can be accomplished much quicker and at less invention cost than something that has to be created out of whole cloth—and is quicker to crystallize into a firm order because its practicability to a large degree already has been demonstrated.

Salesmen themselves are using commendable ingenuity in making the most of these possibilities. For example, some of them are using stereoscopic color slides in portable viewers to bring "fixture inventions" in lifelike three dimensions to their prospects' desks.

Jet Engine Parts Studied at New G

Conditions encountered at 70,000-foot altitudes and at 100-degrees below zero temperatures are simulated in a 40-foot long insulated and pressurized cylinder used to test compressors. Latest jet powerplant will be built with major reductions in strategic materials



Inside this insulated and reinforced steel cylinder, experimental compressors for jet engines are operated under test conditions never before attained. Altitudes of 70,000 feet and temperatures of 100 degrees below zero can be simulated

VITAL parts of secret jet engines are operated at General Electric's new multimillion-dollar aircraft gas turbine laboratory under test conditions never before attained. Altitudes of 70,000 feet and temperatures of 100° F below zero can be simulated at the testing facility which is part of G-E's elaborate jet engine production and test center at Lynn, Mass.

Compressors Scrutinized—Heart of the laboratory is the 40-foot long insulated and pressurized steel cylinder where experimental compressors for future engines are tested. Here, the compressors are operated under the finest instrumentation. Nearly 700 measuring instruments, which transmit information to the sound-proofed control room, record performance of the compressor in operation.

The laboratory was designed to test components rather than complete engines, the theory being that much more fundamental information from the designer's standpoint could be obtained, and in far less time. Research on compressors is being emphasized; the company feels that the compressors offer the greatest opportunity for improvement in designing turbine engines for tomorrow's planes.

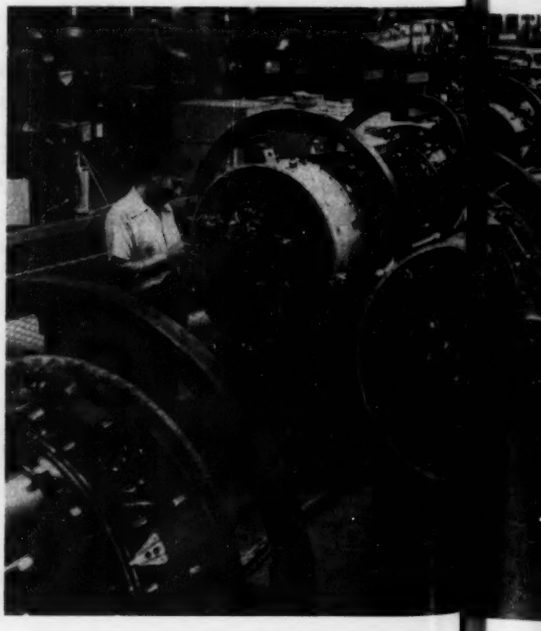
Other major engine components are the combustion system and the turbine. The laboratory also includes a combustion test stand, a small stand to test scale-model compressors and a blade test stand which doubles as a source of air for combustion testing. Turbine testing is performed in other facilities.

Gallons for Degrees—More than 14 million cubic feet of air an hour can be cooled to minus 100°F through a cooling cycle which utilizes water and four sets of refrigeration compressors and turbines. In full operation, the laboratory needs 4,800,000 gallons of water per hour.

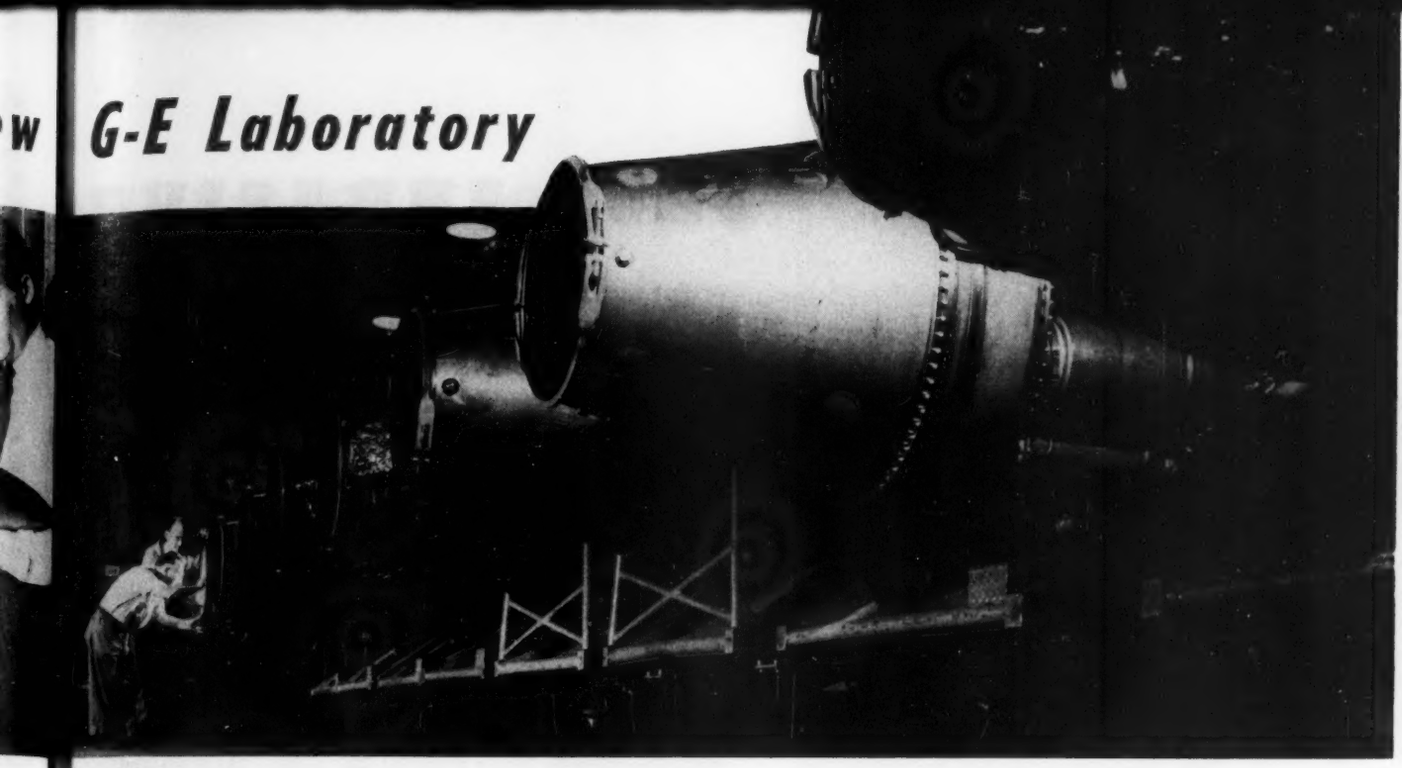
The compressor test facilities can be operated either open cycle, i.e., under atmospheric sea level conditions, or closed cycle where altitudes, temperature and humidity can be controlled as desired. When operating under high-altitude conditions, the air is dried by passing it through silica gel.

Strategic Materials Out—The Air Force recently announced that General Electric is going into production with the nation's first aircraft jet engine to be built with major reductions in strategic materials. The engine is one of two new "all weather" powerplants G-E developed for military planes.

Strategic material content of the basic engine in



G-E Laboratory



J-47 jet engines await test runs at G-E's River Works, Lynn, Mass.

the new J-47-GE-17 is greatly reduced as compared to the basic J-47 engines now powering Air Force planes. Less strategic materials are substituted without any anticipated sacrifice in engine life or performance. Substitutions were authorized only after thorough studies, intensive testing and close evaluation to be sure the less critical materials will do the job just as well as those of strategic importance.

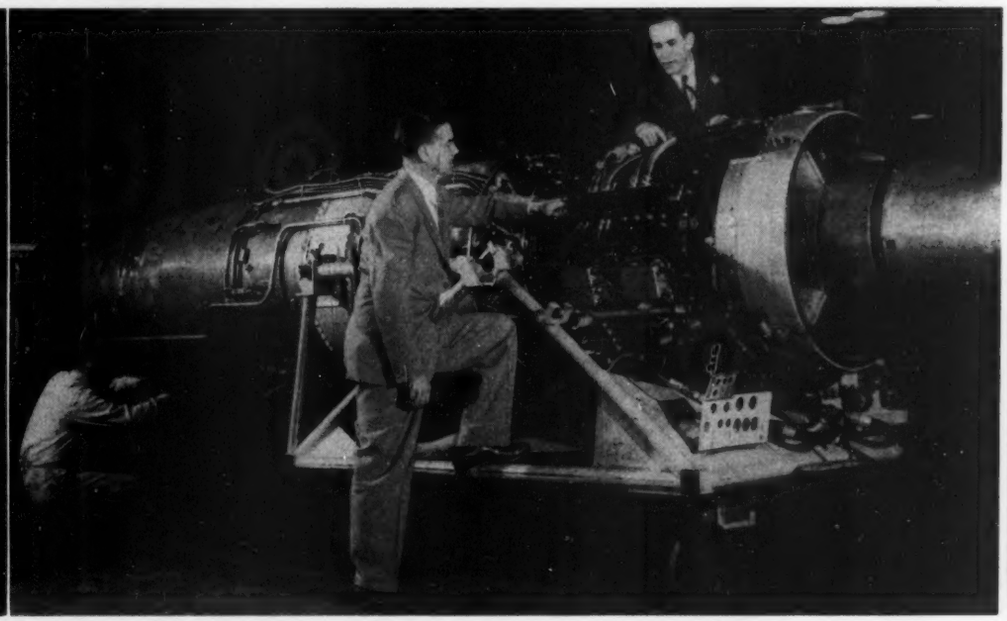
Hot Noses—The J-47-GE-17, equipped with an afterburner, will power the USAF's F-86D interceptor.

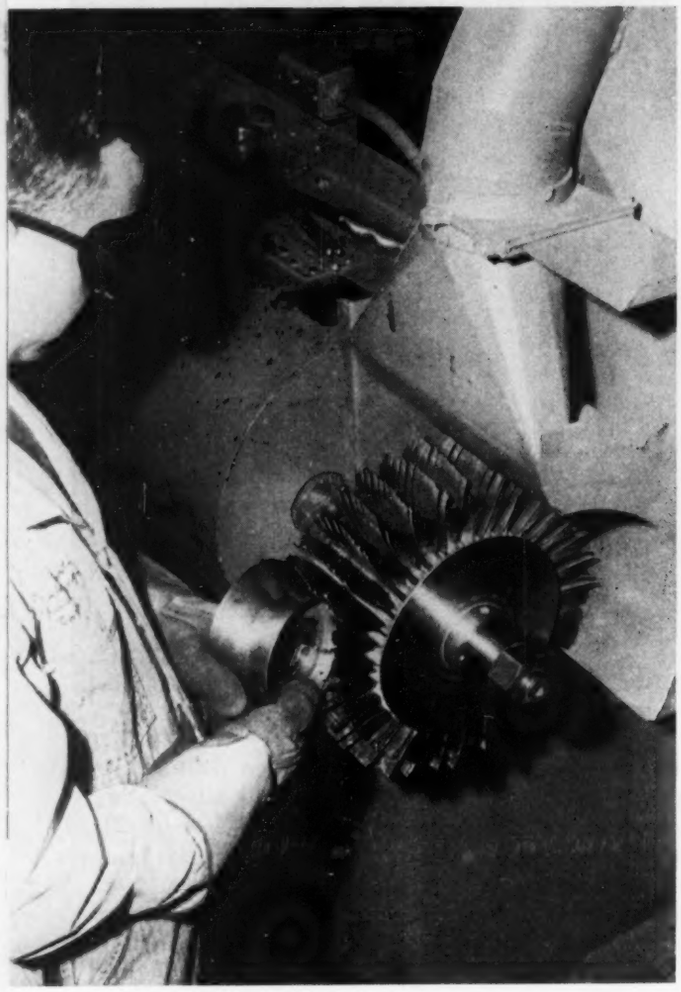
Another new engine announced is the J-47-GE-23.

Both engines are "anti-iced" and have special ignition systems making possible starts at 50,000 feet. G-E engineers overcame the icing problem by giving their engines "hot noses." Hot air from the engine's compressor is bled to hollow parts, including the air inlet guide vanes, fairings and support struts. Ice crystals melt before they can endanger the engine.

View of one of the main assembly lines showing J-47 engines being assembled prior to their "green" run in test cells. After the "green" test the engines are completely disassembled, thoroughly inspected and reassembled for final operating tests before shipment to the Air Force

First jet engine to incorporate major reductions in strategic materials is made ready for test. Designated the J-47-GE-17, this engine is equipped with afterburner for greatly added thrust. Electronic controls automatically regulate fuel flows to the engine to bring about optimum performance





Vonnegut brush-backed sander head being used to finish a typical metal part. It produces satin, preplate or prebuff finishes

FAST ABRASIVE

For maximum performance, contact wheels must be carefully selected. Late development in the belt finishing field is a brush backed sander head which adjusts itself by means of shredded abrasive tips to irregular surfaces

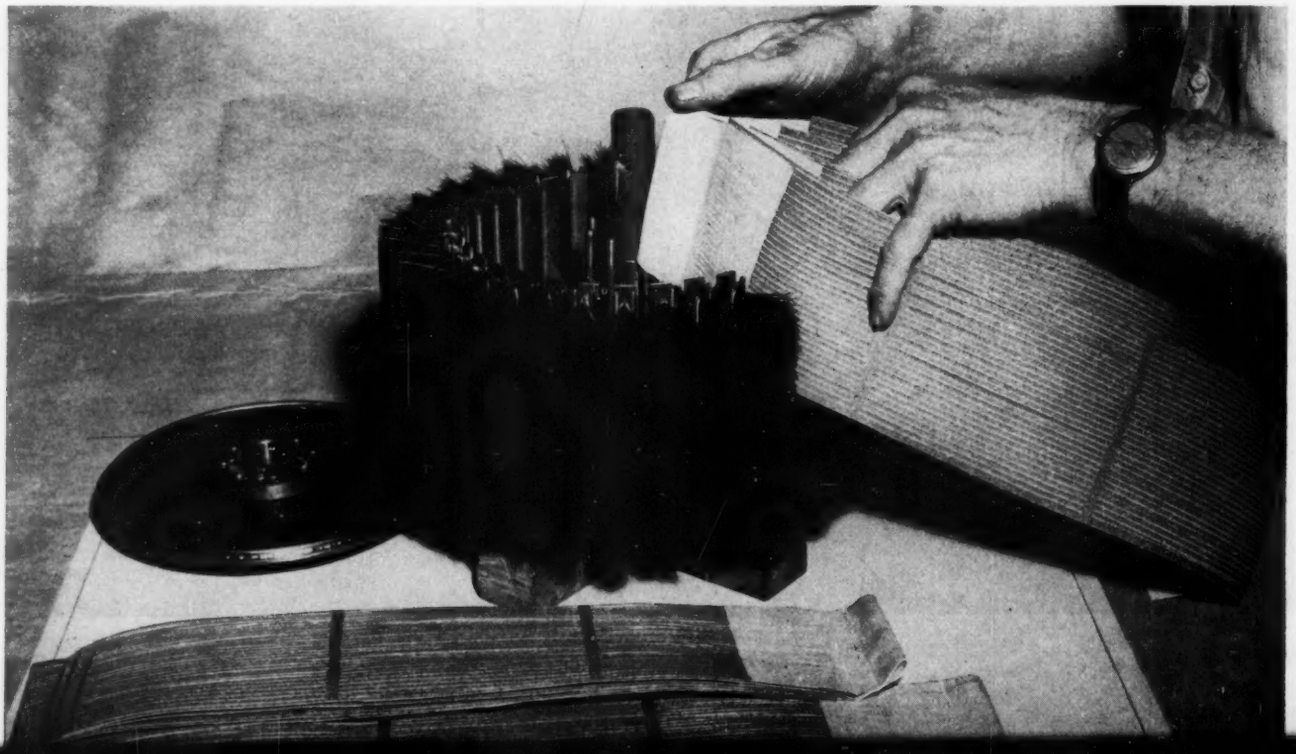
PART II

IMPORTANCE of selecting the proper contact wheels for use with coated abrasive belts can hardly be overemphasized. Contact wheels are available for every type of metal finishing. They are made of cloth, leather, felt, rubber, combined cloth and rubber and cork, all in suitable densities and all designed for specific operations. Wheels can also be obtained with a smooth or serrated face for polishing or grinding.

Full consideration must be given to the type of work being done. If it entails heavy stock removal on flat or semiflat surfaces, the harder the density of the contact wheel, the greater the stock removal regardless of the wheel's composition. Additional cut and longer belt life can usually be obtained from hard contact wheels when the surface is serrated, as the serrations serve to promote a fingering action to the surface of the coated abrasive belt, producing new cutting edges with a resultant increase in productive belt life.

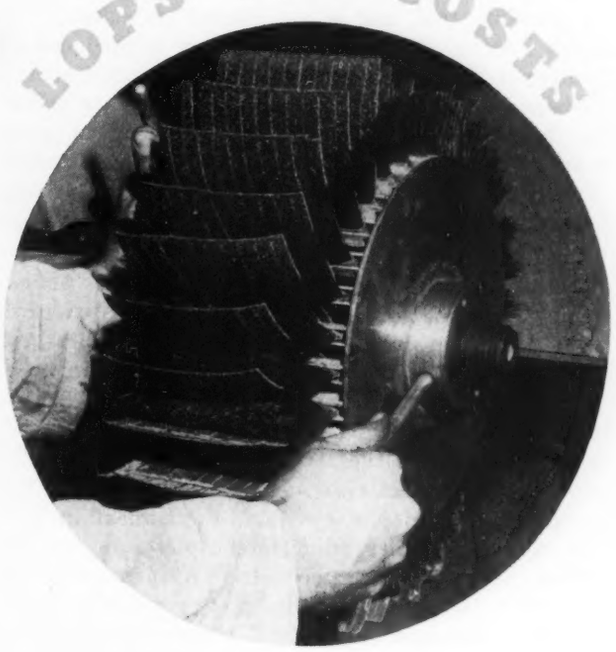
Serrated Wheels for Tough Grinding:—Oathout's data,[2] indicate that serrated contact wheels in leather, rubber and composition rubber and canvas are ideal for the rugged, tough stock-removal grinding jobs.

Below—Inserting coated abrasive loadings in the head



E BELT FINISHING

LOPS OFF COSTS



Polishing head with all abrasive strips inserted and mounted. To adjust loadings, head is mounted on the spindle and nut tightened, securing the head, as shown here. Photos courtesy Carborundum Co.

If, on the other hand, contour grinding and polishing is to be done, the need is for a more flexible type of contact wheel. These contour wheels must be resilient enough to allow the flexible coated abrasive belt to reach the various contours to be finished.

This type of contact wheel is made of high-count cloth, properly folded and stitched into buff sections and held together with metal flanges in the proper face width to insure solid wheel edges beneath the coated abrasive belt although still providing proper resiliency and aggressive cutting action. Between these heavy grinding and contour polishing jobs are innumerable other types of finishing operations that require the proper contact wheel if the maximum effects of belt polishing are to be realized.

Abrasive belts for use with contact wheels are now manufactured with both aluminum oxide and silicon oxide grain, firmly anchored to suitable backings by proper adhesives. All bonds are strengthened to insure maximum use of every grain on a coated abrasive belt without danger of shedding.

Collateral Functions—According to the Minnesota Mining & Mfg. Co., in addition to driving the abrasive belt, contact wheels serve three other very important functions, providing: (1) Exactly the right amount of support against the back of the belt to give the abrasive mineral an aggressive cutting action and eliminate glazing which soon robs an abrasive of its cutting speed; (2) Flexing or fingering action against the back of the belt, which constantly presents fresh, sharp cutting surfaces to the work, maintaining cutting speed at its peak for a longer period of time; (3) the necessary amount of conformability so contoured surfaces can be finished without sacrificing production speed.

Minnesota Mining & Mfg. Co. makes several types of wheels:

K type—A heavy duty rubber-and-fiber contact wheel developed for grinding operations requiring maximum stock removal such as snagging, cutting down welds, and removing heavy flashings. It is effective in grinding gray iron, Stellite, steel, brass, bronze, manganese bronze, or aluminum.

RN type—This wheel is also used on heavy jobs requiring maximum stock removal. It is constructed of sections of canvas radially inserted into a hub with an extra layer sewed and cemented to the outer half of the circumference. The cloth segments extend the full width of the face of the wheel, providing a flat surface that eliminates "dumping" of the edges of the work.

HN type—This wheel is similar to the above except the surface is divided into medium size segments enabling it to conform to light contour work.

Other Kinds, Other Jobs—Other kinds of contact wheels are the Chicago Rubber Co. rubber dual density types, produced in a range of densities, and heavy duty rubber wheels for rapid stock removal. Devine Bros.' compress canvas contact wheel is suitable for almost any type of work where excessive glazing or dulling of the abrasive belt is not a problem. Densities of these wheels are extra hard, hard, medium, medium soft, soft, and super soft to suit various contours and operations.

Formax Mfg. Co. supplies a buff finishing type of contact wheel specifically for use on sharply contoured surfaces where minimum stock removal is required. In this case, stitched buff sections may be removed to give a wheel any desired width. The formed finishing wheel consists of a Sisal fiber wheel which can be shaped with cutting tools or abrasives to conform exactly to unusual contours. This permits the finishing of irregular surfaces at production line speeds.

Brush Backed Sander Head—Carborundum Co., in conjunction with Vonnegut Moulder Co. recently introduced the Vonnegut brush-backed sander head. The device utilizes strips of abrasive coated cloth. Designed for finishing irregular surfaces, the head can adapt itself to the work's contour or irregular surface by means of its shredded abrasive tips. These are pressed into every groove and depression. The Vonnegut sander head is adaptable to automatic

or semiautomatic operation as well as to hand application.

In general, the Vonnegut method is a prebuffing or blending tool, and is not considered suitable for stock removal. A satin-finish pattern is produced as compared to the straight line scratch pattern of a polishing belt. While the brush-backed sander principle has been used successfully for years in wood working shops throughout the country, its introduction to the metal finishing field is relatively new.

Spools and Spiders—The head consists of an outer frame for holding replaceable brushes, and an inner spool for attaching coated abrasive strips. An assembly includes four strips of abrasive coated cloth with anchoring loops attached. Eight of these assemblies complete one loading of the sander head.

The 32 abrasive strips are passed between the brushes of the outer shell. The inner frame or "spider" is rotated so that the strips are brought into working position. Exact extension beyond the brush tips

The head is adaptable without adjustment to various contours, either on different pieces or on different areas of the same piece. Abrasive loadings for the head are available in two general types, namely, aluminum oxide and silicon carbide from 50 to 600 grit. By using any of these dry, or with a grease stick, a great variety of finishes may be obtained. Polishing alloy steel turbine blades is one example. It was possible to produce a 3½ microinch finish by using 600 grit silicon carbide loadings.

Loadings Adjustable—To adjust loadings in the head for operation, the head is mounted on the spindle and the nut tightened to secure the head. The machine is started and the face of the revolving head raked with scrap material. Centrifugal force, plus the raking action will remove all internal slack in the loading. Normally this will bring the tips of the abrasive strips approximately ½-inch beyond the brush tips; this is the average working length.

The brush-backed sander head can be used on swing-frame grinders, straight line polishing machines, and in conjunction with rotary automatics. In the polishing method, the work is pressed gently into the face of the head for best results. Greater pressure will neither improve the finish nor speed the finishing process. Excessive pressures needlessly wear out loadings and brushes.

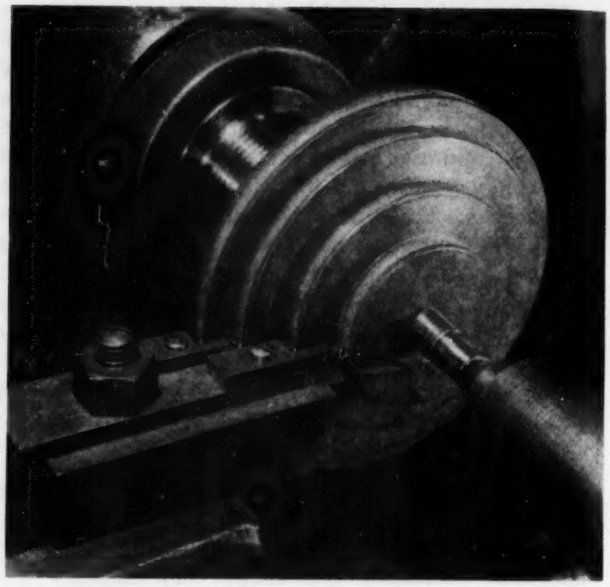
Flat Polish First—Many manufacturers are investigating the advantages of mechanical flat polishing with abrasive belts prior to forming. Some benefits: (1) High production; (2) reduction in amount of hand labor involved; and (3) a more uniform finish is produced from piece to piece and from day to day, because it is a mechanized operation employing factory-coated abrasive belts. Considerable investment in capital equipment is necessary for full utilization of this polishing method on a continuous basis.

Machines are also available for polishing flat metal blanks utilizing abrasive belt polishing methods with a conveyor belt feed. In this application flat hardware, knife blades and similar small parts may be fed manually by conveyor belt or other means. Such machines can be adapted to produce any desired finish from a rough grind to a high polish.

Four Pulley Grooves Machined Simultaneously

MACHINING four grooves simultaneously in this plastic pulley blank for drill presses is reducing production costs by two-thirds at High Speed Hammer Co. Inc., Rochester, N. Y. The savings are attributed partly to the ease with which the plastic is machined and partly to the form in which the Synthane pulley blanks are furnished.

The grooving tool has four cutting edges. It produces grooves with diameters of 1⅞, 2¾, 4-3/16 and



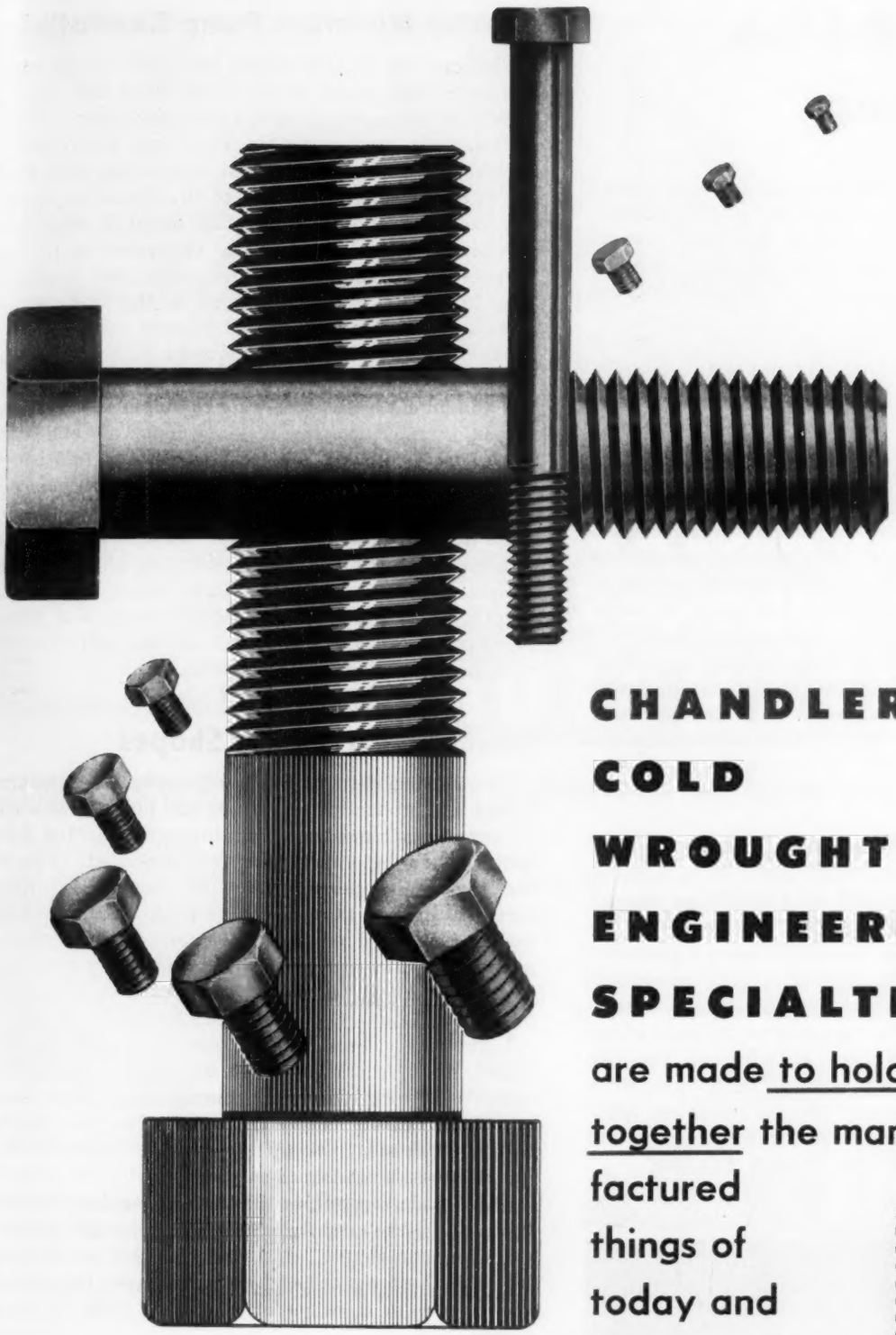
5-7/16 inches on the spindle pulley and 2⅜, 3-23/32, 5-3/32 and 6 inches on the motor pulley.

Before pulleys are shipped, the hubs are drilled and tapped to take ¼-inch set screws and the blanks are lathe-finished all over. Molded spindle holes ½-inch in diameter are reamed by the Rochester firm to a tolerance of plus 0.0005-inch.

Designed for Window Galvanizing

Thought to be the first plant designed exclusively for galvanizing windows is the Detroit factory of Detroit Steel Products Co. Special processing tanks have been installed, large enough to handle a 10 x 12 foot window frame in one operation. Formerly the company hot-dipped its Fenestra windows on special order in commercial galvanizing shops.

The hot-dip keyed-in process will be applied to the company's architectural, industrial, residential and apartment steel windows, using special equipment and techniques, under complete quality control. Galvanizing will be applied after fabrication so no part of the metal area can be left unprotected. All ends, rivets, etc., will be galvanized. Hardware and fittings also will be protected against corrosion. Windows are built of hot-rolled steel sections and will also be Bonderized for a good finish and base for decorative paint finish when desired.



CHANDLER COLD WROUGHT ENGINEERING SPECIALTIES

are made to hold together the manufactured things of today and tomorrow . . . ***and they do it well!***

CHANDLER PRODUCTS CORP.

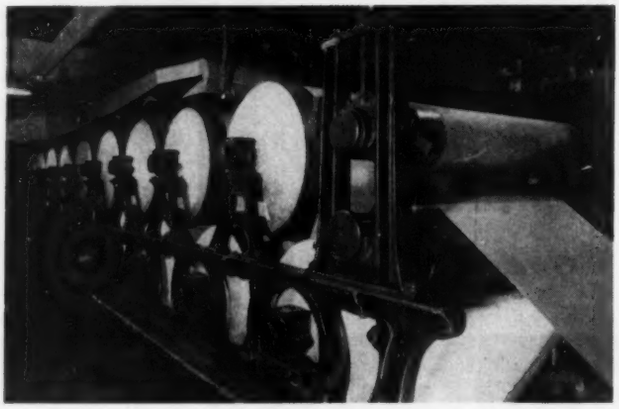
1491 CHARDON RD. CLEVELAND 17, OHIO

Insulation of Roll Ends Cuts Power Costs

PLANT managements will not begrudge necessary power or fuel costs for efficiently operated high-temperature equipment, but too often heat waste has an unwelcome share in these costs. Properly applied thermal insulation is designed to cut heat loss on high-temperature equipment wherever applied—including heated surfaces that are sometimes entirely overlooked or merely disregarded as possible trouble-spots.

The application of a 2-inch layer of mineral wool cement on the ends of cylindrical paper-drying rollers at the Standard Asbestos Mfg. Co., Chicago, may suggest similar cost-cutting possibilities to plant engineers, operating supervisors and power superintendents in their own plants. The ends of the 300° F steam-heated rollers in the illustration were insulated as a result of an investigation conducted to determine ways in which power costs could be further reduced. Although operation of the drying equipment was possible without insulation, alert plant engineers recognized the bare metal roller ends as sources of considerable heat loss. Each end of each cylindrical roller, 3 feet in diameter, is over 7 square feet in area, so more than 15 square feet per roller are now profitably insulated.

More than 90 per cent of the potential bare-surface heat radiation from these roller ends is being saved by 2 inches of mineral wool insulating cement, applied in three layers. Before trowelling on the first layer, the metal was cleaned to insure a good surface for adhesion of the cement. Each subsequent layer was applied after the previous layer had completely dried. The insulating coats on the ends of the rollers were beveled at the circumference and two coats of aluminum paint brushed on to provide a clean, smooth appearance. As the insulated cylinders rotate, the only bare radiating surfaces now are those coming into actual contact with the paper.



Application of a 2-inch layer of mineral wool to the ends and nonworking surfaces of these steam heated paper mill rolls reduced radiation losses

Booster Minimizes Pump Cavitation

Pressure loss at high speeds in geared, rotary vane and centrifugal pumps is a problem which may now be solved by device which uses no moving parts.

Practically any geared or vane type pump has a critical speed, above which the theoretical output of the pump exceeds the ability of the intake to supply the necessary liquid. Once this speed is exceeded, cavitation occurs. This is the formation of partial vacuum or pockets within the pump and causes a drop in output pressure, surges in the flow, pump noise and impeller or gear and bearing wear.

The input booster, a development of F. W. Davis Engineering Co., Waltham, Mass., uses a simple venturi to automatically accelerate the input flow at high speeds, thereby insuring a steady input of solid fluid to the impeller. It is also said to eliminate efficiency loss due to entrained air. Basically, the booster increases the range of speed at which pumps can operate at or near peak efficiency. Thus, it is said that in some cases smaller pumps, operating at higher top speeds, can be used rather than larger equipment. In other cases, the efficient speed range of a given pump can be extended to permit efficient and effective operation at higher driven speeds.

Chucks for Irregular Shapes

Direct labor costs are reduced, expensive jigs eliminated and production of ferrous and nonferrous work on screw machines increased through use of a self-centering spring chuck recently introduced. Use of the device also permits irregular shapes that were formerly drilled, tapped, countersunk, reamed, counterbored or faced on other machines to be machined at higher production speeds on lathes and screw machines, according to the manufacturer, Self Centering Spring Chuck Co., Bridgeport 8, Conn.

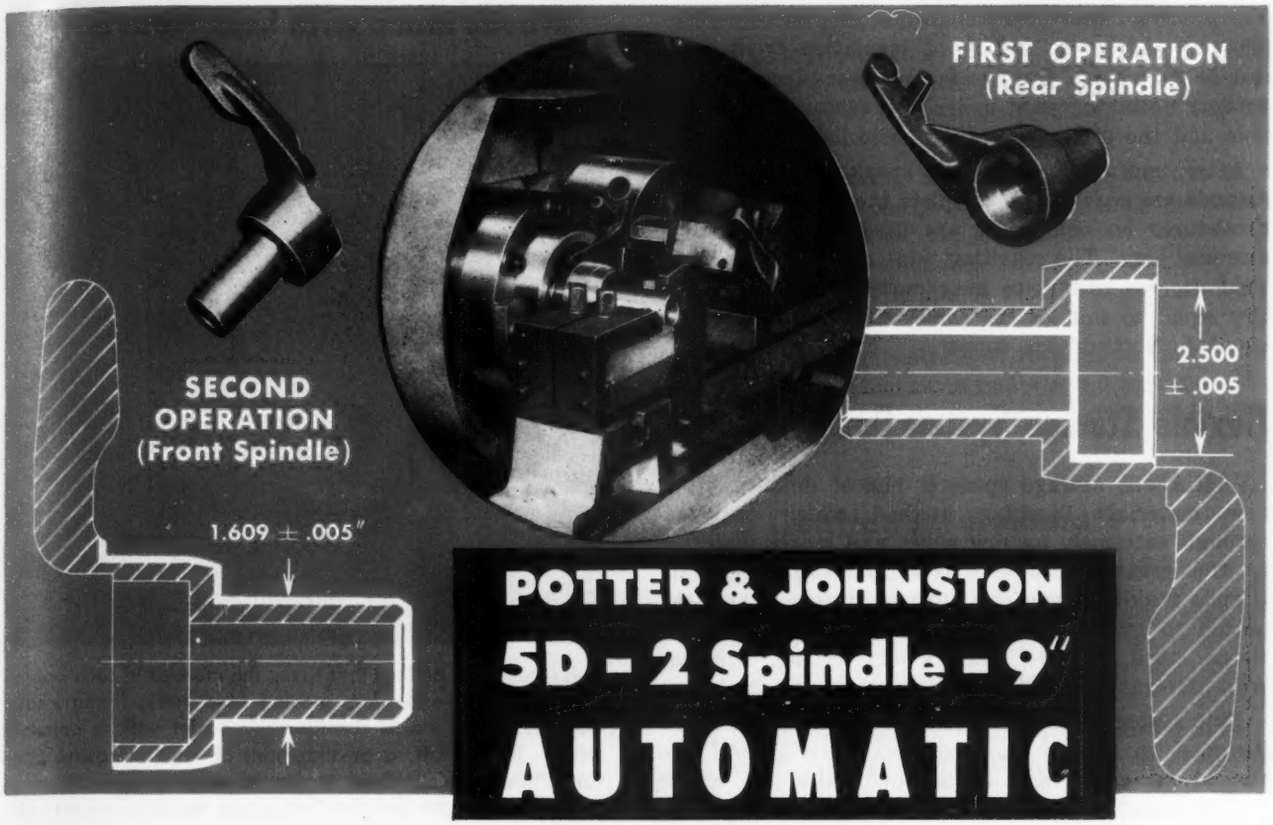
Light finger pressure will seat the work in the chuck, the four jaws of which automatically grip and center the work. After machining, only finger pressure is needed to remove the work. There is said to be no adjustment, clamping or other operation required between feeding each piece.

Metal pads screwed to the chuck jaws are reported to eliminate the need for costly jigs to handle unusual and irregular shapes. Made of No. 1140 oil hardening steel, heat treated and stress relieved, the chucks are offered in a range of capacities from ½ to 8 inches.

Joined With No Outside Heat

Here is a method of welding copper to copper in cable connections that requires no outside source of heat. A development of Erico Products Inc., Cleveland, the process calls for placing powdered copper oxide and aluminum into a small graphite crucible. After ignition by means of a spark, the molten copper flows over the cable ends in the graphite mold, these also becoming molten before being welded together in a solid homogeneous joint.

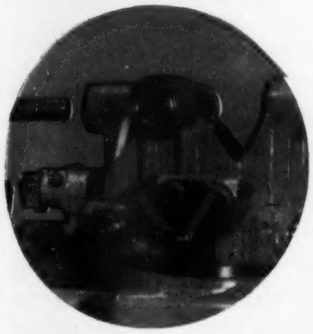
Developed as a method of joining 1/0 to 4/0 cable,



POTTER & JOHNSTON 5D - 2 Spindle - 9" AUTOMATIC

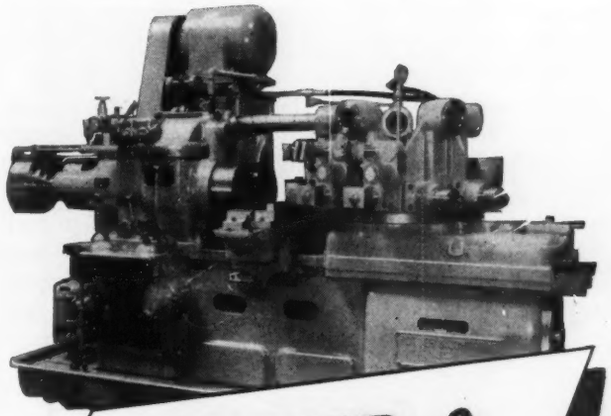
PRODUCES ONE PRECISION-MACHINED FORGING

with every turret cycle



Costs are lowered substantially when work of this calibre is set up on a two spindle machine. This job, and countless others like it, *belongs* on the P&J 5D-2 *Spindle*-9" Power-Flex Automatic. The first series of operations (heavy lines in drawing) are performed on the rear spindle, and the second series of operations on the front spindle. Result: one completely precision-machined part finished with every automatic cycle of the turret. Note the double tooling on each turret face in view at left. The only manual attention is for loading, transferring the work from rear to front spindle, and unloading.

This way, floor-to-floor times are greatly reduced. Labor costs are profitably divided as one operator easily handles two or more machines. Considerable savings are also effected in floor space and power consumption. P&J Tooling recommendations and time estimates based on your own sample parts or prints are gladly furnished upon request.



POTTER & JOHNSTON CO.
PAWTUCKET, R. I.
subsidiary of PRATT & WHITNEY
Division Niles-Bement-Pond Company

P&J 50 YEARS' EXPERIENCE IN TOOLING FOR
Precision + Productivity + Economy

the process requires a preparation of cable by stripping approximately 1 inch of insulation from each end to be joined. Both ends are then placed in the welder, butts together under the center of the tap hole and the clamp type crucible locked.

After ignition by the flint spark gun, about 10 seconds are required to complete the weld. The same procedures on equipment are used when attaching terminal lugs. The resulting joint made by this Cadweld process is said to have current carrying capacity equal to that of the cable, and tensile strength equal to soft drawn copper.

Flexible Storage System Doubles Space

AVAILABLE storage space is almost doubled by a new materials handling method which operates through extremely narrow aisles and stores material to the greatest usable height. Chicago Tramrail Corp.'s Stak-Rak selective storage system is also reported to give 100 per cent selectivity in handling rough stock, pallets, rolled goods, drums, bundles, dies, patterns, tote boxes.

This system consists of self-standard rack-columns designed to receive the required material and arranged on either side of narrow aisles. A crane bridge spans the entire width of the storage area and travels lengthwise on tracks to any depth. It is equipped with an overhead trolley from which is suspended an electric fork lift.

The fork lift revolves to serve either side of the aisles. With a pushbutton in his hand a single operator can control any or all motions required to place or remove any item from its place on the rack in any aisle.

Storage facilities may consist of continuous shelving or any type of rack, although the new device may also be adapted to handling skid boxes or other self-stacking fixtures. It can be used with or without pallets; and the self-standing columns can be spaced at any interval required to receive the merchandise.

Aisle requirements for loads up to 2000 pounds capacity are the actual physical dimensions of the unit to be handled plus 8 inches for the column and the necessary running clearance. As a rule, aisle space is one-half that required for ordinary fork trucks. The fork lift may be supplied with 36-inch forks with a horizontal spread of 3 feet, or a multiple fork for handling long materials, such as bar stock, with a 10-foot spread.

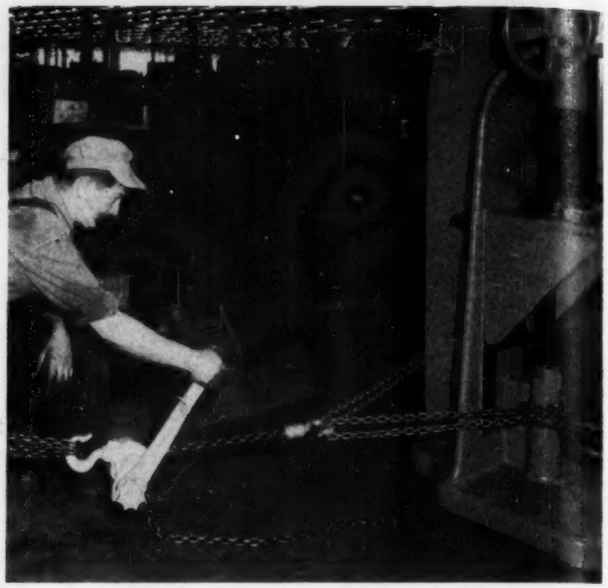
Let's Call a Gear a Gear

Providing a uniform terminology for use in offices, shops and text books is an American standard on gear nomenclature, terms, definitions and illustrations, recently approved by American Standards Association, New York. Prepared by a committee representing manufacturers, users and independent experts, the standard groups a system of terms and their meanings in a logical series rather than in alphabetical order.

Many definitions have been written in a way that makes them depend on one another. Thus there is a line of relationship back from pitch diameter to top circle to pitch cylinder and to pitch surface. It is said that this method of arrangement leads to a more comprehensive understanding of the concepts and geometrical relations.

Standard was developed by a committee jointly sponsored by the American Gear Manufacturers Association and the American Society of Mechanical Engineers under the procedures of the American Standards Association.

Moves More with Less Heave-Ho



Hoisting and pulling that taxes the muscles in such operations as work positioning, moving machinery, lifting heavy objects, etc., is made considerably easier with a portable device, the Pul-Lift, a development of Yale & Towne Mfg. Co., Philadelphia. Said to be as easy to operate as a wrench, the light weight link chain model supports the load by a self-actuating load brake at any point of the lifting action. Safety top and bottom hooks open slowly without fracture when overloaded. It is available in ¾, 1½ and 3-ton capacities.

No Sharpening for a Year

Expensive press downtime for die changes during peak production eliminated and overall die life increased 65 times. These are two of the advantages John E. Mitchell Co., Dallas, Tex., enjoys as the result of using carbide dies to form channel-shaped "saw-bands" used in cotton cleaning machines.

Steel stock from which the bands are made is 0.030-inch thick, cold rolled C1040 strip purchased in coils. Stock feeds into one end of the automatic saw-band machine in a horizontal position from the reel.

Oval hold in the channel saw is punched first. The blanking die then punches the teeth and forming die gives the section its final channel shape. The round hole is then punched and the saw band cut off to length.

According to Mitchell, the Carboloy die performed

20 million blanking operations—a full year's operation—before it had to be sharpened. More than 30 hours of maintenance time per machine is eliminated each year, most of it at the rush season, since down time was at least 15 minutes per die change.

Although the initial sets of Carboloy blanking and drawing dies are still in operation, Mitchell estimates that life of the blanking portion of the die will be at least 100 million blanks, an increase in service life of more than 65 times.

"Sweat-Cooled" Metals Step Up Rocket Speeds

"SWEAT-COOLED" rocket and jet engines capable of higher speeds than ever may be in the offing for the U. S. Rocket and jet engines are being pushed to such high capacity these days that one of the big problems is maintaining surfaces cool enough so that the metals will not be heat-damaged. "Hotter" engines are desirable however, because higher gas temperatures mean greater speeds and better fuel efficiency in jet engines, Allan P. Colburn, provost of the University of Delaware, told the ASME at its 1950 annual meeting.

Many cooling methods are under consideration and one of the means being studied is sweat-cooling. In sweat-cooling, he said, liquid is forced through the metal, either through transverse holes or porous parts of the metal. The liquid then vaporizes on the hot surface of the metal. "Calculation of heat transmission involves diffusion of the vaporized liquid counter to the direction of the conduction of heat," the Delaware University provost said.

Alternate Cooling Methods—Effect of the vaporized liquid on the surface friction also involves an important factor to be studied, he added. An alternative cooling means was also cited. This is by use of a liquid used well below its boiling point. Since the metal surface may be well above the boiling point of the coolant, local boiling is involved.

He said a great deal of work is under way at the National Advisory Committee for Aeronautics on heat transmission to turbine blades and means for cooling them. They may be cooled by internal coolants as air, water or other liquids, but problems of superimposed free and forced convection are encountered.

Another possibility for securing higher fuel efficiency is by the use of very efficient heat exchangers. Much work is under way in this direction.

Cutting Oils Improve Tool Life 100%

Light color, good transparency, improved cutting ability, and antirust properties are the principal advantages of Gulf Oil Corp.'s improved Lasupar cutting oils.

Good antiweld properties and load carrying ability are said to be obtained by the inclusion of free elementary sulphur, sulphurized mineral oil, and sulphurized fatty oil. The sulphurized fatty oil provides high lubricity and antiweld properties, enabling the oils to produce excellent surface finishes.

In addition, efficient cooling and extreme pressure properties of these cutting oils permit their use over a wide range of machining operations, Gulf engineers report.

The new cutting oils are made in a range of viscosities to suit the particular machining job. Selection is based on various control factors, such as type of metal being machined, cutting feeds and speeds, the type and the shape of cutting tools, and chip removal.

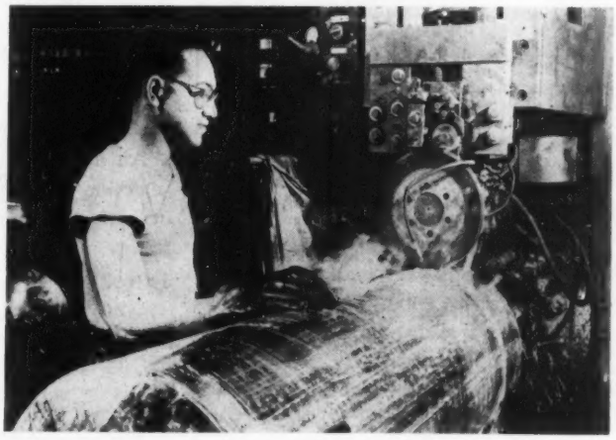
Field test demonstrations revealed as much as 100 per cent improvement in tool life and averaged 25 per cent increase on all jobs over performance of the former brand.

G-E Coating Intermediate Combines Unusual Properties

A new baking-type coating intermediate that is expected to form a versatile base for a whole new field of protective coatings, was recently developed by General Electric's chemical department. Designated as R-108, the new intermediate combines outstanding chemical resistance with flexibility and heat resistance.

Based on selected phenol derivatives developed in G-E laboratories, R-108 is said to be compatible with a variety of coating resins. Protective coatings formulated with the material possess the characteristics of the intermediate which include resistance to alkalies, acids, oxidizing agents, solvents, salts and other corrosive chemicals over a wide temperature range; extreme toughness, flexibility, and resistance

Two a Minute

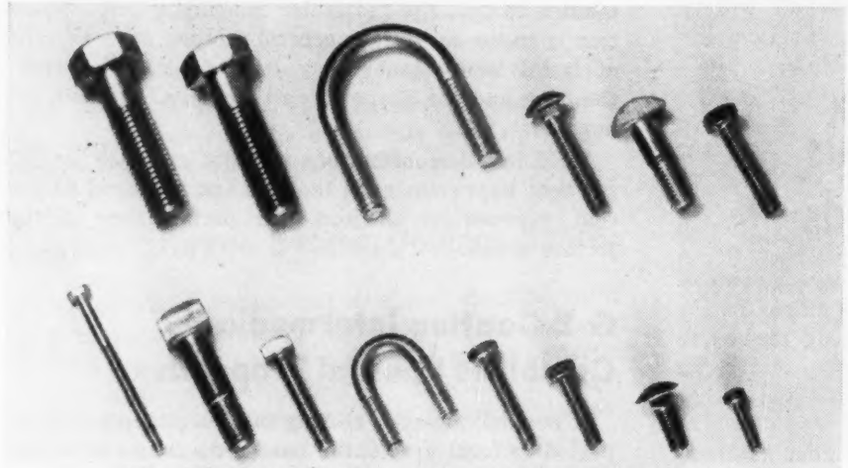


Resistance welding of the bottom plate to the preassembled shell and head, after both have been hot-dip galvanized, proved the answer to successful high-speed production of automatic water heater tanks at Rheem Mfg. Co. Conventional welding methods destroyed the zinc coating on the steel, opening bare areas where corrosion might start. A special type of resistance welding machine, shown in operation here, was developed by the company, and the bottom plate is joined to the shell in only 30 seconds during periods of peak production

COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" Headquarters for BRASS, BRONZE and COPPER



Various types of bolts with rolled threads using silicon bronzes.

Silicon Bronzes, Correct Tooling Insure Long Life for Bolts, Nuts

The desire of manufacturers to produce bolts and nuts capable of withstanding corrosion and its gradual weakening of parts has led to a widespread use of the silicon bronzes.

The ability of these bronzes to withstand season cracking and other forms of corrosion and their high tensile strengths make them excellent for all types of nuts and bolts, wire and cable connectors, pole line and marine hardware, water meter bolts and valve parts.

Tensile strengths up to 90,000 psi can be obtained in cold formed bolts with silicon bronze No. 609 (approx. 98% copper and 2% silicon).

Silicon Bronze Very Malleable

This bronze is very malleable even in a hard drawn condition, permitting good flow of metal in difficult cold forming applications.

Materials, machines and tools are important factors in cold heading. The choice of the header, in regard to size and number of strokes, depends on the amount or length of material needed to form the upset; the length of the shank under the head, the location of the upset portions on the product and the shape.

Temper Important

Care must be taken in selecting the temper for each cold forming job. If the head is large and thin, softer temper with its increased malleability is advised to prevent heavy tool wear. If the upset is not too severe, then harder temper can be used.

Since cold forming and rolled threading increase the hardness of silicon bronze, the amount of cold work for each job should also be analyzed and wire temper selected to give the desired tensile strength in the finished piece.

Choice of Header

An approximate formula for the selection of the proper type of header utilizing standard heading practices follow:

1-stroke	2-stroke	3-stroke
L=2D	L=4D	L=6D

D = wire diameter
S = length of wire shank
L = length of wire for head.

Silicon bronzes can be upset to 20 diameters compared to the finished shank diameter by extruding and upsetting in each stage of muliple-station header.

Work in excess of 15 diameters in length of shank should be fabricated in an open die header.

Steel Inserts Used

High chrome, high carbon steel inserts have been used successfully in round dies. The inserts are turned, hardened in a neutral atmosphere which will prevent decarburization or carburization, then pressed into soft steel holders. The press fits are sufficiently great to cause closing down of the insert inside diameter. The die is then lapped to size. The face of the bushing is held to exactly the same diameter as the head of the bolt. If a larger diameter is used cracking of the hardened bushing is possible.

Some Dies Flush Hardened

Header dies in some cases are solid with hard faces and work holes. If the metal were hardened completely, there would be danger of cracking. To attain this condition, flush-hardening is employed. A stream of water is forced through the hole and on the working face, then after a few seconds the whole fixture is submerged in a quenching medium. The exit of the water from the die is usually impeded to prevent venturi action. Often it is necessary to use some means of diverting the entering stream so that the water hits all surfaces evenly. The work hole is then tapped to size and the face polished.

Flow of metal is dependent on the design of die and punch as well as the ductility of the alloy. Working backward from the finished part, definite flow characteristics of the metal can be studied and the coning punches designed to control the flow toward the finished item in two or three-stroke headers.

Laboratory Help Available

For information on the silicon bronzes and other cold heading alloys, Bridgeport's Laboratory is prepared to cooperate with fabricators of coldheaded parts. Write for Duronze manual.

Stages in production of silicon bronze nut in nut machine—four blows and pierce. Slug is at end.

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, research chemist of the Bridgeport Brass Company.

Prevention of Corrosion in Storage

Wooden Packing Cases

We have discussed the effect of wet wood and wood undergoing decomposition when used for boxing metal parts for shipment or storage (December, 1949 and April, 1950 issues). Difficulty from this cause can be avoided through the use of waxed or chemically treated woods.

A recent paper by A. L. Simmons[1] on the "Tarnishing of Nickel Silver" points out that condensed moisture alone will not tarnish nickel silver articles in storage. However, it was found that acetic acid from green hardwood packing cases penetrated sealed plastic wrappings and pitted and colored the metal badly during a spell of humid weather.

Green lumber contains as much as 60-70% moisture when cut from the tree and is likely to give off vapors containing acetic acid. Hardwoods are worse in this respect than softwoods and should not be used for casing metal articles unless properly treated.

Paper and Paperboard

Some types of paper contain sufficient sulfides and chlorides (February and April, 1950 issues of this column) to lead to objectionable tarnishing or corrosion when used in contact with metal parts. Certain classes of paper and paperboard contain glue, casein, urea-formaldehyde resin, melamine resin and other nitrogenous organic materials which can undergo slow decomposition, particularly under humid conditions, releasing sufficient ammonia to lead to season cracking of wrought brass articles and tarnishing of copper and its alloys. (See November 1949 issue of this column). Action is often slow and detection may come too late to repair the damage.

It is advisable to check the ammoniacal nitrogen content of paper products. A "Tentative Method of Test for Organic Nitrogen in Paper and Paperboard," ASTM D-982 is recommended.

[1] Metal Progress 58, 3, 345-7 (September, 1950)

Silicon Bronze Pipe Clamp Resists Stress Corrosion

Speedy, permanent repair of pipes is necessary when blowouts, leaks and splits occur in oil, gas and water systems.

The illustrated clamp utilizes high strength silicon bronze No. 632 strip for the strap. The bolt and nut are made from silicon bronze No. 609. Manganese bronze castings are used for the clamp. Depending on the liquid or gas being handled, either a soft neoprene rubber or pure gum rubber is used for the gasket. As the length of the unit increases, additional locking bolts and nuts are added.

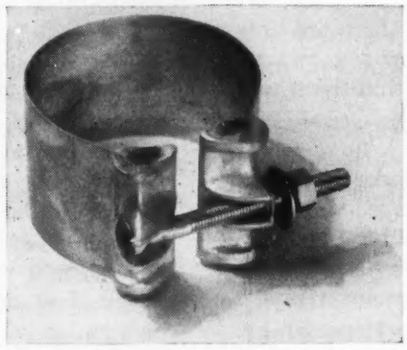
Silicon bronze is excellent for this application because it resists stress corrosion cracking better than yellow brass.

Its high ductility permits the strap to conform to the irregularities of the pipe. Its high strength produces great pressure on the gasket and pipe without danger of breaking.

The all-bronze construction of the repair clamp insures excellent corrosion resistance to the types of corrosive materials involved in liquids, atmosphere or underground. Clamps used in clay adobe soil have shown no signs of failure after 15 years.

Silicon bronze No. 632 for the strap (97% copper and 3% silicon) has a tensile strength of 60,000 pounds per square inch in the annealed condition. When drawn to hard temper, tensile strength exceeding 90,000 psi is attained. It has the corrosion resistance of copper and under some conditions more.

The No. 609 alloy contains 98% copper and 2% silicon and is a fine alloy for heading in bolts and nuts as it is more ductile.



Pipe repair clamp using silicon bronze strap, bolt and nut—Courtesy Stauffer Mfg. Co., El Monte, California.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Tube De-Expander is reported to simplify removal of expanded tubes from tube sheets. De-expander tools are tapered and threaded, with flutes cut longitudinally through the threads. Set consists of right and left hand tools driven by electric rotary impact tools. One tool is inserted in each end of tube imparting torque which breaks expanded joints. Tube can then be gently tapped out of tube sheet. Present model de-expands tubes from ¼" to ½" O.D. **No. 1108**

Vertical Milling Attachment affords 1½" quill travel and allows full use of table travel. Usable on bench, light floor or heavy milling machines, the attachment features quick, rigid single and compound angular settings. Spindle speeds are 380, 700, 1200, 2500 and 5200 rpm. Locking micrometer depth stop is graduated in thousandths. **No. 1109**

Vibration Tester can measure amplitude of machine vibrations. Powered by flashlight batteries, tester is held against machine to be tested. Vibration amplitude is indicated by width of oscillation of light beam on graduated ground glass scale. Detachable 8" probe which runs in longitudinal ball bearings can be used for measuring directly on rotating shaft. **No. 1110**

Metal Primer is said to provide maximum adhesion on metals such as brass, bronze, aluminum, tin, lead, zinc and steel. Primer acts as rust inhibitor by forming insoluble phosphates at metal surface and forms corrosion-resistant anchor coat. Fast drying and flexible, it can be applied by spraying, dipping or brushing. **No. 1111**

Hydraulic Forcing Press is designed for quantity production. Self-contained power system develops up to 10-tons pressure. Machine has 18" x 20" table with 3" U-slot, 22" gap, 10" reach and 12" maximum stroke. Vertical 5-hp motor drives 11-gpm constant volume pump. Ram is guided to prevent rotation, and return stroke is adjustable for fast cycling. **No. 1112**

Lathe Taper Attachment is provided with universal clamps to mount on all makes of engine and toolroom lathes having swing up to 36". It provides for cutting taper up to 20° or 4" per foot and 12" longitudinally at one setting. Swivel bar has V-ways with ends graduated in degrees and inches per foot. **No. 1113**

Tailored Soldering Shapes can be supplied in a variety of forms to meet requirements of conveyor line soldering applications. Disks, rings, washers and odd shapes are furnished in various melting point silver solders and other metals for individual applications. **No. 1114**

Automatic Countersink supplies its own thrusting action, reportedly requiring no manual effort other than inserting mandrel in hole. This portable, air-powered tool has self-locking grip that holds tool to work sheet. Drilling speed and depth of cut are automatically controlled. When countersinking operation is completed, mandrel contracts, permitting removal of tool. Holes ⅜" and larger can be countersunk, from ¾" to 1⅛" across mouth. **No. 1115**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL

"Bridgeport" BRASS CO.

BRIDGEPORT BRASS

BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal

Warehouse Service with Slitting Facilities in Principal Cities

Advertisement

to abrasion; and unusual stability to aging at elevated temperatures.

Field tests show that the properties of R-108 make it especially useful in coatings for drums, food containers, tank cars, chemical tanks and process equipment, and appliances.

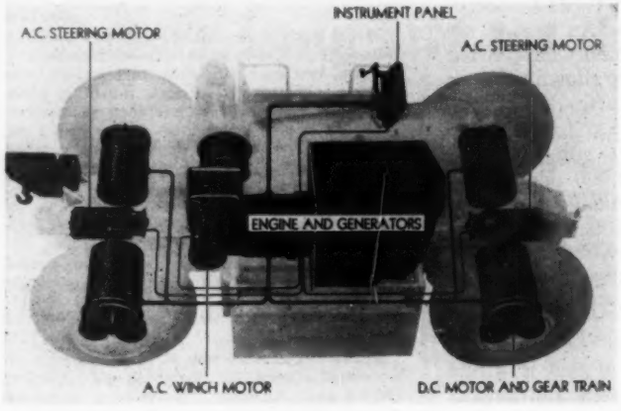
No Transmission, No Clutch

LeTourneau's latest machine puts diesel-electric drivers on rubber-tire-mounted heavy construction equipment

A MACHINE with no clutch, no transmisison, and no differential, and which incorporates a new method of power transmission as used on heavy construction equipment is being built by R. G. LeTourneau Inc., Peoria, Ill.

The so-called Tournatow uses its own diesel engine to generate its own power. The alternating and direct current generators are driven by a GM 671 6-cylinder, 2 cycle diesel engine, and provide power for all steering, forward, reverse and lateral movements of the machine and for the winch operating through a patented fairlead.

This self-generated current is conducted to an electric motor and gear arrangement contained in the



assembly of each of its four wheels. There are only four moving parts in each wheel—the pinion, two reduction gears and the internal gear within the wheel.

Effectiveness of the drive system is attested to by the tremendous pull it can exert. In a recent demonstration conducted for the Air Force at Wright Field, Dayton, O., the machine developed a pulling power sufficient to maneuver giant aircraft weighing about 400,000 pounds, more than 16 times the weight of the Tournatow.

One 11-inch diameter ac motor develops 50 hp. These motors develop instant pulling power, and can accelerate from standstill to a top speed of 3600 rpm in 1/6-second. They can stop and reverse themselves to 3600 rpm in ¼-second.

Operation of the machine is simple. The throttle for its diesel engine is advanced to turn the generators at the required speed. Regulation of the flow of electric current from the generators to the wheels is accomplished through a potentiometer, whose action is similar to the speed and power controller used on street cars.

Characteristics claimed for the machine are its ability to develop a smooth start, smooth pull and quick and easy stops. A power stop can be accomplished simply by returning the controller to the "off" position. After the diesel engine is started and the throttle opened, no further use of the throttle is necessary. Steering, according to LeTourneau, is accomplished the simplest and easiest way—by the use of pushbuttons; forward and reverse movement by rotating the controller.

The machine appears to have possibilities of affecting great forward strides in the heavy equipment industry. Its usefulness will not be confined to the earthmoving or materials handling industry. The principle of spotting electric power where it is needed —at point of action—answers many of the problems facing designers of modern equipment.

The machine's use of flexible wires to transmit current from its power plant to motors placed at points of application, eliminates the necessity of final drive gears and shafts, of differential, transmission, universal joints, hydraulic braking system and other mechanical gearing and linkages normal in conventional four-wheel drive, four-wheel steer machines.

Test Metals By Impact Loading

Feature of a new machine for testing ferrous and nonferrous materials under torsion impact loading is the simultaneous recording of torque loads and energy absorption values on the tape of a two-pen Brush oscillograph. Designed and built at Michigan State College, East Lansing, Mich., the instrument uses the energy of a rotating flywheel to snap off a small specimen held in a special chuck.

Use is made of SR-4 strain gages with a Brush strain analyzer for measuring torque. A photocell tachometer records energy levels indirectly by means of a wave form printed on the oscillograph tape alongside the torque record.

Has Flat Side—The new type specimen used has essentially a zero gage length, obtained by cutting an 80 degree V-notch around the periphery of a short piece of ½-inch round stock. Specimen has a flat spot on one side to allow for gripping in the machine; it is held so that the faces of the holding chuck and twisting dog are about 1/16-inch apart. By this arrangement, a shear plane 5/16-inch in diameter is produced in the specimen.

Flywheel of the torsion machine has an initial speed of 420 rpm and weighs enough to possess an energy level of 20 foot-pounds at this speed. The combination of low energy level and low wheel velocity make the instrument sensitive to small energy changes.

It is said to be useful for checking materials on the basis of composition or heat treatment. Values of torque and energy obtained by the test are said to be true values and show ability of various materials to resist shock loading in torsion, as well as the effect of composition heat treatment and operating temperatures on those materials.

Fork trucks are not always the answer

This Elwell-Parker High Lift truck is 30% lighter than comparable fork models—leaving more floor-load capacity for handling and storage

This Elwell-Parker ELN-6T has had its platform replaced with forks to handle palletized loads. Total weight with battery is 2 tons *less* than a fork truck of same load capacity (6000 lbs.) . . . Fork trucks are heavier because they must be counterweighed to balance the outboard load, whereas on high lift models, the forward underframe and wheels support much of the load.

On many jobs, particularly in older buildings, this advantage is very important:—More goods can be tiered higher on the same floor space. Where floor or elevator capacities are limited, high lift models are often the *ONLY* type of tiering truck that is practical. Load stability is greater. In addition, high lift trucks cost less.

ELWELL-PARKER OFFERS YOU UNBIASED ADVICE **whatever your truck needs. Its line is not restricted. Included are ALL basic types—fork, high lift, low lift, cranes, tractors. Available in over 40 sizes and models. Let us have an EP man recommend trucks for *your specific requirements.* The Elwell-Parker Electric Company, 4106 St. Clair Ave., Cleveland 3, Ohio.**

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893

FREE BOOKLET
fully explains scientific materials handling. Ask for "Industrial Logistics".

Open Hearth Charging Time Cut 55%

At Armco's new Middletown open-hearth department, 45,000-pound loads of scrap and other charging materials are mechanically raised from ground to charging level in 25 seconds. This first-of-its-kind materials handling set-up cuts furnace charging time and directly increases steel production

By L. R. RISSLER
Development Engineer, Elevator Division
Westinghouse Electric Corp.
Jersey City, N. J.

OPEN HEARTH charging time has been whacked 55 per cent at Armco's Middletown, O., plant. The reduction from 3½ to 1½ hours was made possible by improved materials handling methods.

Basic modification over present methods is in the use of a hoist for lifting the charging materials from the ground level to the charging level. Automatic operation of the various elements in the material handling sequence is the installation's salient feature.

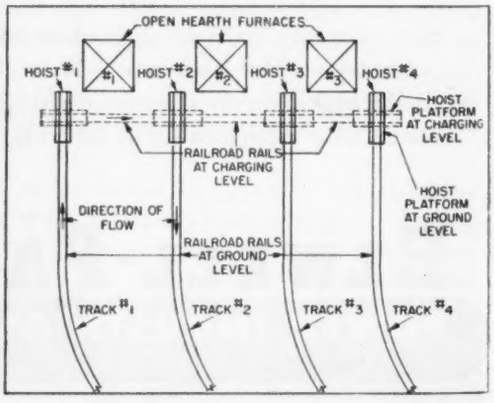
Four Pans per Car—Fig. 2 shows the location of hoists and furnaces. Cold charging materials are brought into the plant at the ground floor level on flat cars carrying four pans of charging material each. Assume furnace No. 1 is being charged. The loaded cars are lined up on track No. 1 at the ground level, in front of hoist No. 1. The first car is mechanically pushed onto the hoist platform and positioned on the rails at the center of the platform by a cager—a device that engages lugs on the side of the car. The cager is interlocked with the hoist so that interference between the two units cannot occur. While the hoist makes its run another device moves the second car into position to be pushed onto the hoist.

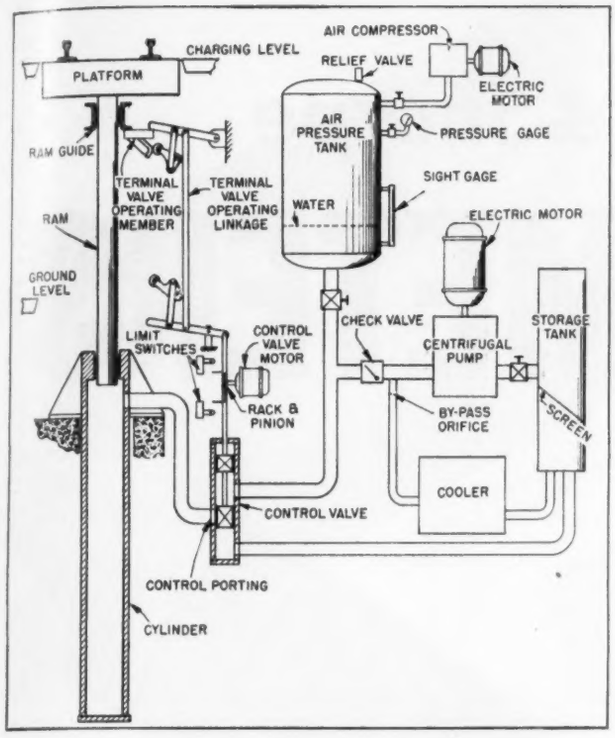
As the hoist moves upward to the charging level, the platform is automatically rotated through 90 degrees, placing the charging cars so they can be pushed from the scrap hoist platform by the charging machine to any position in front of furnace No. 1. The charging machine then charges the furnace in the conventional manner; empty car and pans are pushed onto hoist No. 2, which lowers the empty car to the ground level where it is pushed off onto track No. 2 by No. 2 cager.

While the charging proceeds, hoist No. 1 returns for another load and places the second car into position at the charging level by the time the first car is emptied and placed on hoist No. 2. This procedure continues until furnace No. 1 is fully charged. This forms a train of empty cars on track No. 2 to be pulled away for another load. Furnace No. 3 can be charged simultaneously with furnace No. 1—using hoists 3 and 4—with no interference, as the hoists are completely independent of each other.

Fig. 1 (left)—Buggy is on scrap elevator halfway between loading level and charging floor. Note cam and roller turning elevator through 90 degrees

Fig. 2 (below)—Plan view showing arrangement of hoists and furnaces





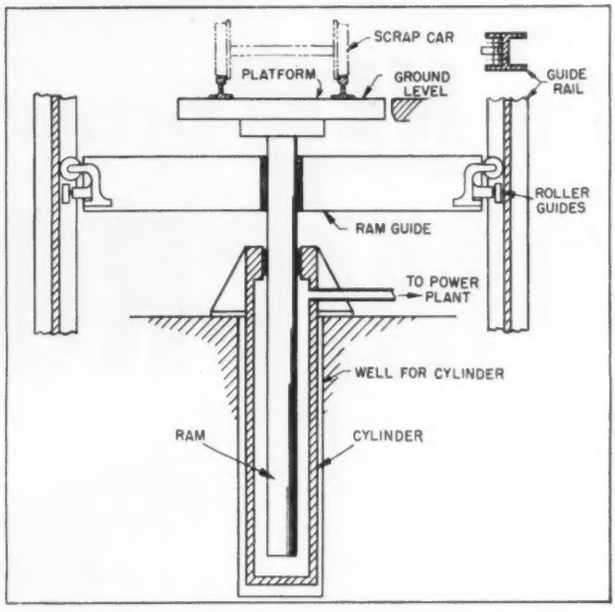


Fig. 3 (left)—Power plant schematic for hoist. Platform is raised by a 22-inch diameter direct-acting vertical hydraulic ram. Platform rotates automatically 90 degrees during its ascent or descent

Fig. 4 (above) — A cross-section view showing hoist arrangement

120-Second Round Trip—Each hoist can raise 45,000 pounds from ground level to charging level in 25 seconds. The round trip time is 120 seconds: 32 seconds for loading, 25 seconds up, 31 seconds for unloading, and 32 seconds to return to the ground level, completing the cycle. Using a longer time cycle, each hoist can lift 83,400 pounds. Distance from the ground level to the charging level is 20 feet 6 inches. The platform is 19 feet 4 inches long and 10 feet 1 inch wide. All the hoists are identical and completely independent of each other, which provides the utmost in flexibility.

Fig. 3 shows, schematically, hoist's power plant; Fig. 4 shows the hoist. The hoist platform is raised by a 22-inch diameter direct-acting vertical hydraulic ram. The platform is rigidly connected to the top of the ram; the ram and platform assembly is free to rotate. Top of the ram directly beneath the platform is held in position by a ram guide which moves with the platform. Each end of the ram guide is guided by rollers running in vertical guide rails. The ram passes through a bushing in the ram guide, which permits the platform and ram to rotate with respect to the guide. With this arrangement, the ram is held rigidly in its vertical position and can withstand the eccentric loading which occurs on the platform.

Turns 90 Degrees—A helical-shaped cam at one corner of the platform, and rigidly fastened to the building structure rotates the platform automatically 90 degrees during its ascent or descent. As the platform moves vertically, the cam forces the platform to rotate by means of cam rollers mounted on the platform.

At both the charging level and ground floor level the cam rollers are loose on the cam. This permits V-shaped blocks, shown in Fig. 5, to control final movement of the platform and accurately to position the platform rails with respect to the rails at the landings.

When the hoist is shut down, it is parked at the charging level and locked into position by pneumatically-operated locks. The locks wedge the platform between the V-stops and the bevelled nosing on the lock, making the platform a solid and rigid part of the charging level. In case a hoist is shut down, scrap cars can be rolled across the parked platform, thereby eliminating the possibility of a complete shut down.

Going Up!—A balanced type control valve, Fig. 6, admits liquid under pressure to raise the ram and platform. The valve also directs liquid from the cylinder to the storage tank to lower the platform, depending upon requirements.

Control valve motor is operated by pushbuttons at the charging level, ground level, at the control valve, and on the charging machine, thus allowing the hoist to be operated from any of these stations

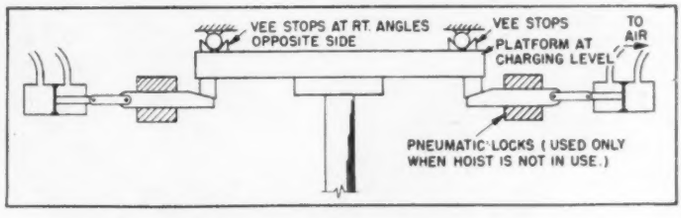

VEE STOPS AT RT. ANGLES OPPOSITE SIDE
VEE STOPS
PLATFORM AT CHARGING LEVEL
TO AIR
PNEUMATIC LOCKS (USED ONLY WHEN HOIST IS NOT IN USE.)

Fig. 5—Cross-section view showing locks and stops at charging level. V-shaped blocks control final movement of the platform and accurately position platform rails with respect to rails at landings

The NEW Brown & Sharpe MICROMETERS

NEW! Larger diameter thimble

NEW! Stainless Steel, one-piece spindle and screw

NEW! Exclusive adjustments . . . easy, quick, accurate

NEW! Carbide measuring faces

- Black graduations
- Dull chrome finish
- Wide divisions
- Hardened and ground threads
- New sliding taper thread adjustment
- Positively locked screw and thimble
- Quick, easy thimble adjustment
- Rust resistant
- Available in complete range of sizes

Cutaway view shows exclusive Brown & Sharpe adjustments—simple, positive, accurate.

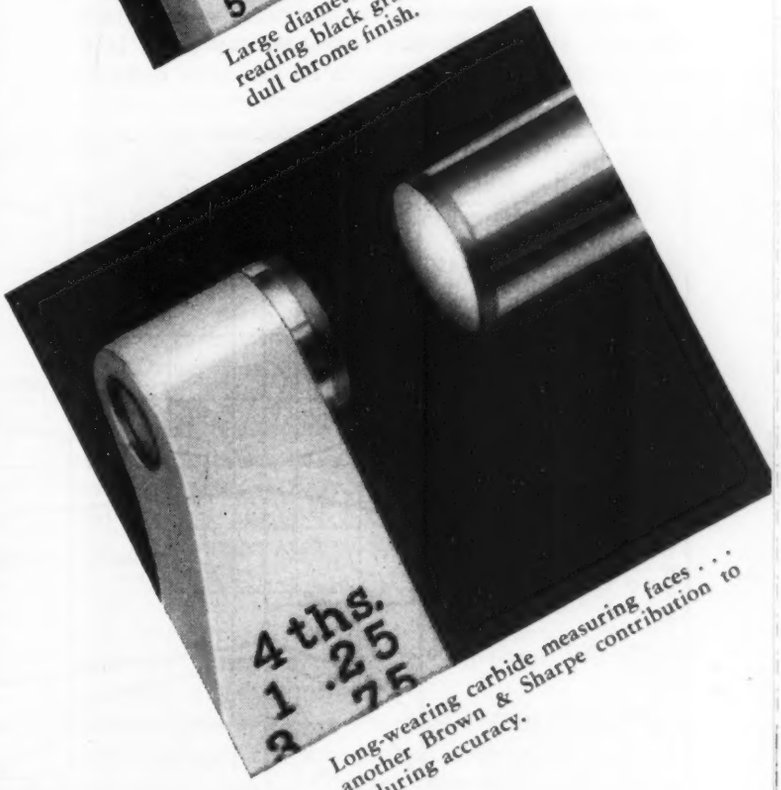
Large diameter thimble provides wide divisions. Easy-reading black graduations and figures on rust-resistant dull chrome finish.

An exclusive combination of advanced features!

Never before has a line of micrometers offered such an outstanding combination of advanced features! Improvements throughout the new Brown & Sharpe Micrometers now contribute higher performance to every essential of micrometer service . . . readability, accuracy, ease of adjustment, durability.

Notice the widely-spaced divisions, black graduations and dull chrome finish . . . for easy, accurate reading. Observe the integral spindle and screw with simplified thread adjustment and longitudinal adjustment of thimble on screw. Consider what the long-wearing carbide faces and one-piece stainless steel spindle and screw with hardened and ground threads mean to durability!

Only by actually seeing and holding one of these new micrometers in your own hand can you appreciate all the advantages of these many new features. See them at your hardware store or tool supplier's. Write for illustrated folder describing the completely new line of Brown & Sharpe Micrometers. Brown & Sharpe Mfg. Co., Providence 1, R.I., U.S.A.



Long-wearing carbide measuring faces . . . another Brown & Sharpe contribution to enduring accuracy.

We urge buying through the Distributor

Brown & Sharpe

B·S

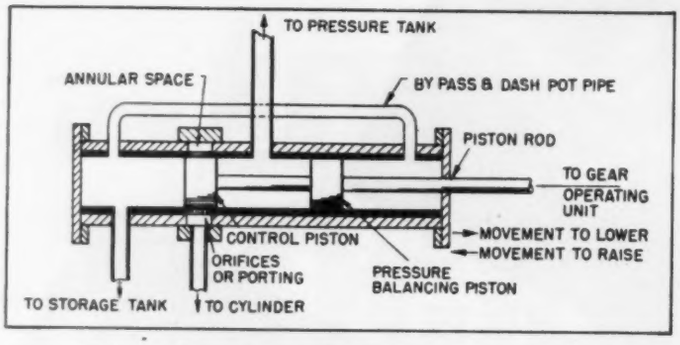


Fig. 6—Cross-section of balanced type control valve. Valve admits liquid under pressure to raise the ram

(with some restriction by interlocking for safety reasons). The control station on the charging machine only permits stopping or lowering of the hoist if the platform is less than 3 feet from the charging level.

The station located at the ground level station controls the stopping, raising, or lowering of the hoist if the platform is more than 3 feet from the charging level. The charging level station controls the hoist if the platform is less than 3 feet from the charging level. The other station near the control valve permits stopping, raising, or lowering of the hoist with no zoning restrictions, and is used primarily for maintenance. Flasher-lights signal at the level to which the platform is moving. This warns the operators when the hoist is moving in their direction.

Magnets and Scissors—An emergency stop feature makes it possible for any operating station to stop the platform in any position in its ascent or descent. This mechanism is a set of spring-actuated scissor-type jaws, mounted on the ram guide and controlled by an electromagnet. If the "stop" button at any of the four control stations is pushed, the electromagnet is de-energized; the spring operates the scissor which then clamps the vertical control-valve operating member.

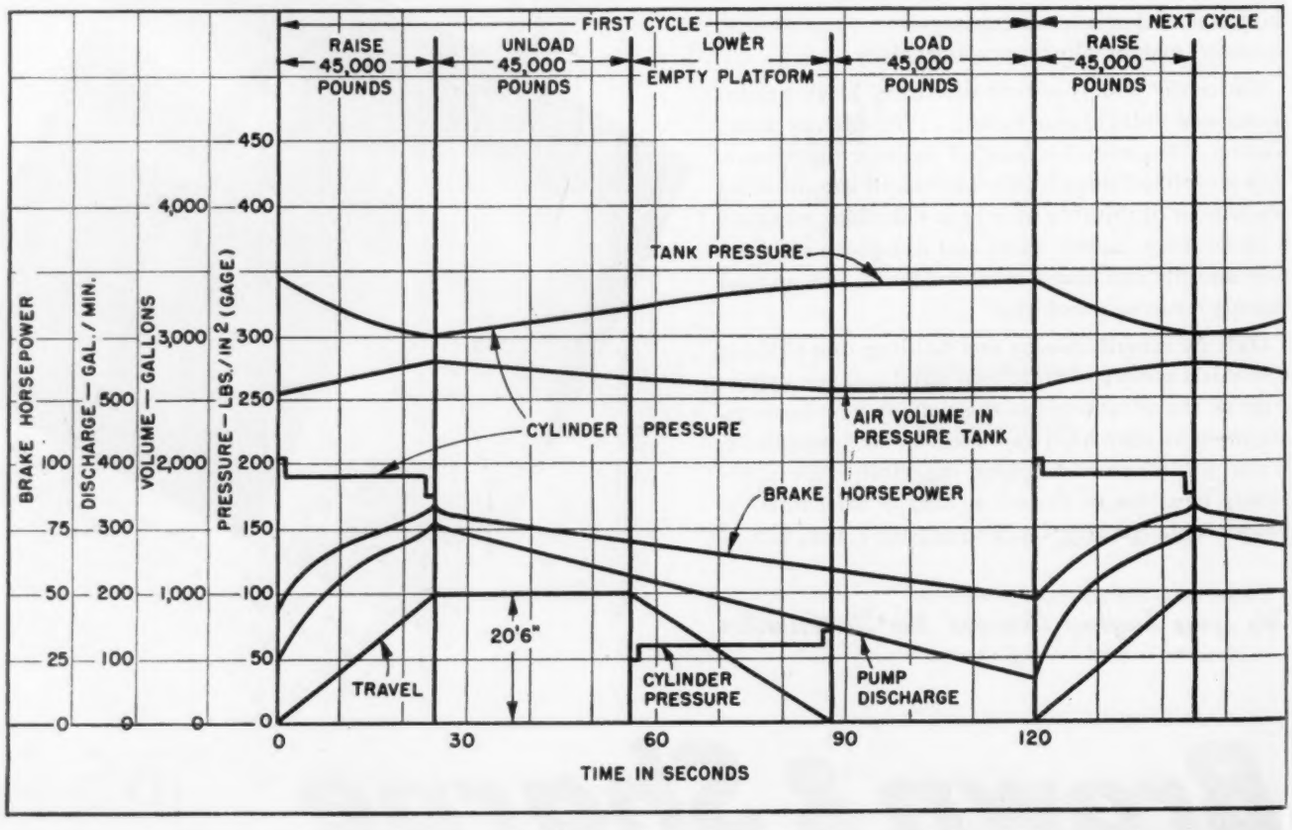
Since the emergency stop mechanism moves with the ram guide, it will move the valve piston in the proper direction to close the valve porting and stop the platform.

Curves, Fig. 7, show characteristics of the power plant during the hoisting cycle of the hoist used to raise the scrap or charging material from ground level to charging level. This hoist is the one which determines the hoisting cycle. The various characteristics are plotted against time. Zero time is taken as the time at which the "up" button is pressed to raise the 45,000-pound load.

Circuit Pressure Balanced—Since there is no speed-regulating device with this equipment, orific characteristics in the control valve are of a definite value for the up and a definite value for the down position. If the control valve is adjusted to obtain a particular time for a given load up and a particular time for a given load down, the other loads will have a speed which permit hydraulic pressure balance in the circuit.

All reasonable features are provided on the equipment to facilitate repairs and maintenance, and to reduce shutdown periods for repairs to a minimum amount of time.

Fig. 7—Curves showing characteristics of power plant during hoisting cycle

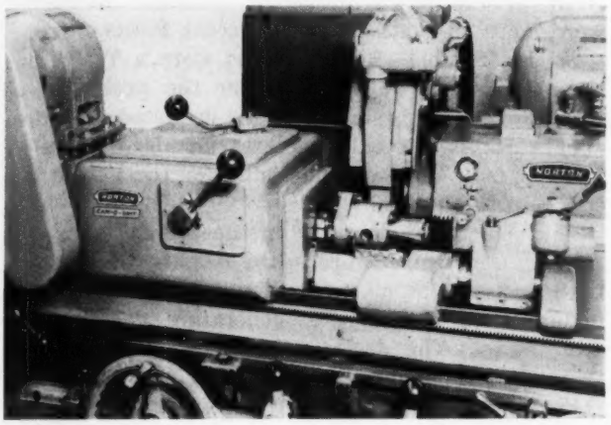


New Piston Grinding Unit

NEW unit for grinding automotive or other types of pistons requiring a taper to the conventional relief form is being built by Norton Co., Worcester, Mass.

The unit grinds the desired shape by holding the piston between centers. Head end of the piston is carried in a dog or holder, and centered on the master cam spindle center. The bottom end of the piston is supported on a special footstock center carrying a spherical ball bearing. The footstock in which this special center seats does not rock because it is mounted on a stationary member of the machine.

The spherical ball bearing on the footstock center becomes a pivot about which the piston revolves and



oscillates according to the motion of the rocking bar as imparted by the master cam. In-and-out motion at the footstock pivot is zero, since this is a stationary point.

Motion and corresponding amount of piston relief that is ground at any point between these centers are proportional to the distance from the footstock pivot. Thus a greater amount of relief is ground at the head of the piston than at the bottom of its skirt, which is nearer the pivot.

Wire Brushing No Longer Needed

Wire brushing of rusty galvanized roofing before zinc painting is economically unsound and unnecessary, according to actual field tests recently concluded by the American Zinc Institute.

Perfect preparation of the surface, which is compulsory in most painting operations, would require wire brushing. Years of metallic zinc paint (MZP) testing in normal roof exposure in midwest states proves that the results are only slightly better, if any, than those obtained with an ordinary stiff-bristled fiber broom. Certainly it appears that wire brushing fails to increase service life enough to justify the added expense in time and labor.

A typical result: The southern exposure of an extremely rusty barn roof in Vincennes, Ind., was divided into two sections. One was steel-brushed, the other brushed with a broom, and both were given two sprayed coats of MZP. Seven years later, the difference in the condition of the two sections was almost indiscernible.

Metallic zinc paint, as made by more than 150 manufacturers in this country, is a mixture of 80 per cent zinc dust and 20 per cent zinc oxide in linseed or soybean oil. It is battleship gray in color (unless colors are added), weighs approximately 23 pounds per gallon and covers 600 to 800 square feet per gallon, depending on the condition of the surface.

Theoretically it is best to paint roofs or sidings of zinc-coated corrugated steel before actual rusting begins—when dark areas are first observed here and there over the surface. With ordinary roofing, this appearance will develop usually after 10 to 12 years' service. However, institute engineers generally recommend painting when 10 per cent of the surface has weathered sufficiently to show rust. If only spots of rust have developed, give them a coat first, then paint the entire surface.

Small Plant Has Advantages

Small plants and businesses have multiple advantages over large companies from the standpoint of labor and community relations, as well as in certain aspects of management, Don G. Mitchell, president of Sylvania Electric Products Inc., New York, told the 1950 ASME annual meeting. He predicted a "fine future" for small business in this country and pointed out that the government has a policy of encouraging such concerns.

Mr. Mitchell's remarks were based on the operation of Sylvania, which he described as a large small company operating "under a policy of decentralization of manufacturing wherein the line authority is out of the field and the functional authority stays at headquarters."

"Most large companies were once small but in the process of becoming large, the management became absorbed, more and more, in major corporate matters to the point where intimate contact with the day-to-day operations and with the personnel was lost," Mr. Mitchell said.

"Our feeling is that operating in small plants with a high degree of local authority and responsibility helps us to maintain that intimacy without losing any of the benefits of a strong central organization."

Breaking up the manufacturing operations into these small plants was deliberate, after benefits from small plant management were experienced during the war, and when it was necessary to turn to a number of feeder plants to help the larger factories take care of a sudden load of war orders many times the pre-war capacity.

Mr. Mitchell said that the experience of his company has proved that small plant management can accomplish relatively as much, and sometimes more, than big plant management.

Other advantages of small plant management are flexibility, mobility, good employee morale and executive training through independence and responsibility.

Mr. Mitchell characterized management personnel as the most important part of small plant operation, adding that managers of such plants have to be good all-around men for the simple reason that the small plant cannot afford an "army of specialists."

Electric Annealing Furnaces Shorten Time Cycle

SUBSTANTIAL reductions in annealing costs are reported following the installation of five new General Electric annealing furnaces at National Malleable & Steel Casting Co., Cleveland. Three are of the high-temperature type, rated at 390 kw and maintaining temperature of 1800° F; two are 230-kw units, with maximum operating temperature of 1300° F. Each has 5-ton capacity. Electrical control system is designed for special application to the malleable casting industry, and each may be shut off independently by a master switch, without affecting the other furnaces in the bank. Each furnace has separate controls to regulate and keep constant the heat on the side of the furnace. An identical control equally regulates roof heat so that uniform heat is assured throughout the furnace.

In electrifying the operation of these furnaces, National Malleable has shortened the time cycle involved in producing castings. Two G-E electric cranes are combined to reduce the operation of either loading or unloading to single co-ordinated efforts. A gantry-type crane, operating on tracks running parallel to the bank of furnaces carries loads to each furnace. From this crane's control cab, the operator activates a crane hoist, located above the furnaces to lift the furnace being loaded. Next, the load is moved forward underneath the furnace and set on supports. The furnace then is lowered to its base and, by means of a sand seal, forms an air-tight chamber, thereby providing an atmosphere control and contributing to the reduction of scale.

In addition to the reduced production time cycle and the higher quality resulting from this change to electric heat, the company has realized other economies and advantages. The high expense involved in the use of annealing containers has been limited. Better working conditions and substantial savings in floor space have resulted. Replacement of heating units and other maintenance expenses have been reduced appreciably.

Gulf Introduces Improved Electro Cutting Oils

Three new and improved grades of Gulf electro cutting oils, were recently introduced by Gulf Oil Corp., Pittsburgh.

The new products retain all of the performance features essential to good cutting oil operation. They are transparent, highly sulphurized mineral oils containing maximum efficient amounts of highly active sulphur through the use of a special process for sulphurization of mineral oil.

The new lighter and brighter color is said to permit closer inspection of machine parts.

The new oils were subjected to extensive plant demonstrations with excellent performance in a wide variety of machining operations. Tool life increased as much as 100 per cent, with additional benefits of improved surface finish, effective cooling of tools and workpiece, and maximum production on tough, high speed operations being gained through the use of the new oils, the company reports.

The new oils are recommended for heavy-duty machining operations on ferrous metals and alloys, particularly for low machinability steels. Excellent anti-weld characteristics and extreme load carrying ability permit use of these oils on heavy duty and difficult machining operations.

Scientific Discoveries Aid Power Plant Engineering

NEW devices based on recent scientific discoveries were much in evidence at the recent Power Show.

Smells Trouble—Brown Boveri Corp.'s Trafascope is an example. This unit is for the protection of transformers and similar liquid-insulated electrical apparatus. It not only actuates an alarm when an internal fault develops, but indicates the nature and source of the trouble.

The instrument operates on the principle that the rapid rise in temperature in the neighborhood of any fault causes the oil to crack and solid insulating materials to disintegrate, generating gases of decomposition. The device collects and makes use of these gases to operate the alarm.

Much of the work formerly done in the chemical laboratory or by technicians using field instruments is now performed by direct recording instruments permanently installed in the power station or processing plant. Cambridge Instrument Co., New York, displayed dissolved oxygen/hydrogen recorders for corrosion-prevention in boiler plants; also single and multipoint recorders for the analysis of CO_2, H_2, CO, CH_4 and C_2 in flue gases.

Instruments Engineered In—Milton Roy Co., Philadelphia, exhibited an automatic pH control system, complete with pumps, meters and other control equipment. Such systems are now being engineered into the latest industrial and public utility power plants.

A new type of ring packing which incorporates a molded resilient ring of synthetic rubber in a T section and two nonextrusion retainer rings of a laminated phenolic material were shown by Green, Tweed & Co., North Wales, Pa. These rings, it is claimed, can be used at temperatures up to 250° F and will not leak over extended periods of use at pressure up to 3000 psi. They are recommended for rods up to 10 inch diameter and pistons for bores up to 12 inches.

Farval Corp., Cleveland had an innovation this year in the form of a spray valve. This can be added at any point in a regular centralized lubrication system where compressed air is available. It is designed to spray oil or grease through a nozzle in any desired amount and over any area where slides or open gears require lubrication.

A sheet and plate cutting machine for circular and slot cutting, beading and folding was shown by American Pullmax Co., Chicago. The machine does not penetrate the metal, but shears it through to the breaking point, leaving a smooth perpendicular cut.

Century 1 TO 400 H. P. MOTORS

Choose From These Many Types To Fit Your Job

DEPENDABLE CONSTRUCTION . . . Plus

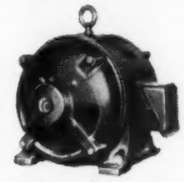
PROPER SELECTION MINIMIZE SHUTDOWNS

It's easy to select the proper electric motor for your job from Century's complete line — from 1/6 to 400 horsepower. A wide range of types and kinds are available to satisfy all popular requirements. They are carefully designed, built and tested to assure maximum performance throughout their long life.

Here are examples of Century's line of INTEGRAL HORSEPOWER motors.

Polyphase

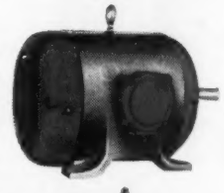
TYPE SC—Open Drip proof General Purpose Motor. Meets the needs of most installations where operating conditions are relatively clean and dry.



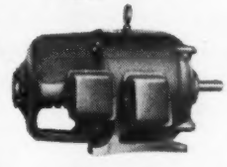
TYPE SC—Splash proof. Supplies protection where plants must be washed down. Keeps out all falling or splashing liquids—rain, snow, sleet, etc.

TYPE SC—Totally Enclosed Fan Cooled. Protects against dusts, mist, oil, fog. Inner frame protects vital parts of the motor, seals out harmful matter.

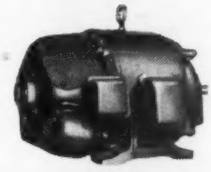
TYPE SC—Explosion proof. Protects life and property in atmospheres charged with explosive dusts or gases.



TYPE SR—Wound Rotor. Open Construction. Ideal for applications requiring low starting current with high starting torque, reversing or adjustable speed.



TYPE SR—Wound Rotor Splash proof. Same electrical characteristics as motor shown above. In addition, gives adequate protection against falling and splashing liquids.

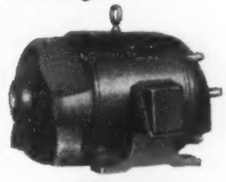


Single Phase

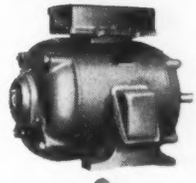
TYPE RS—Repulsion Start Induction, Open Construction, Single Phase Brush Lifting Motor. Combines high starting torque with low starting current.

683

TYPE RS—Splash proof. Same advantages as open construction, plus protection against splashing and falling liquids.



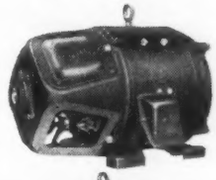
TYPE CSH—Capacitor Start Induction, Single Phase Motor. Suitable when high starting torque with normal starting current is satisfactory.



TYPE CSH—Splash proof. Same advantages as motor shown above, plus protection against falling and splashing liquids.

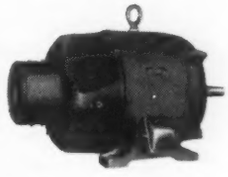
Direct Current

TYPE DN—Direct Current Motors. Suitable for use where direct current is available, or its use desirable.



TYPE DN—Direct Current, Splash proof.

TYPE SY—Synchronous. Suitable for continuous operation at a uniform load for power factor correction.



In addition to a complete line of integral horsepower motors, Century offers fractional horsepower motors, gear motors, generators, AC and DC motor generator sets.

Century C MOTORS

For a long life of satisfactory performance, specify Century motors for all your electric power requirements.

CENTURY ELECTRIC COMPANY, 1806 Pine Street, St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

BULL'S-EYE
FOR
PERFORMANCE
90% LONGER LIFE
30% GREATER LOAD
HOOVER BALL BEARINGS
with
HONED RACEWAYS
You are not buying bearings, you are buying performance . . . bearing life, load capacity, quietness. In performance Hoover, America's only ball bearing with honed raceways, gives you the most for your money. When you specify and buy Hoover Ball Bearings you buy unbelievable quietness plus 90 per cent longer life, 30 per cent greater load capacity. A growing list of distinguished American manufacturers of quality machines and equipment are finding that their bearing dollars buy more value when they select Hoover.
Engineering and purchasing executives are invited to write for the Hoover Engineering Manual.
THE ARISTOCRAT
OF BEARINGS
HOOVER BALL and BEARING CO.
Ann Arbor, Michigan

Removes Weld Discoloration

Discoloration which so often results from the welding of stainless steel may be removed by a simple method, said to be especially useful in removing it from hard to get at interior corners.

A development of the Research Division of Armco Steel Corp., Middletown, O., the method makes use of a small amount of acid solution to cover the discolored area, a copper rod, a direct current power source, and electrical connections; these are the only components. It is reported that the cleaning not only removes weld discoloration but passivates the cleaned area as well.

Wave the "Magic" Rod—A copper rod about ¼-inch in diameter is bent to a convenient shape and short pieces of rubber tubing are placed on the rod to keep it from touching the stainless steel and shorting the electrical circuit. Enough 50 per cent phosphoric acid is poured into the welded corner to contact the copper rod and also to wet the discolored weld area.

Rod is connected to the negative terminal of the power source and the stainless part to the positive terminal; then the rod is passed along the joint to be cleaned.

As the cleaning action depends on the electrical current passing through the solution, the rod should not touch the metal. Weld discoloration is removed quickly, the company claims. Rods can be moved at the rate of about 2 fpm.

It has been shown that other acids can be used but these will etch the surface more than phosphoric. The acid concentration controls the appearance of the cleaned surface, higher concentration giving a brighter finish. The power source should provide about 6 to 9 v dc and from 5 to 6 amp for each square inch of rod that is in contact with the acid.

Also Use Copper Rod—Where weld discoloration covers a large area, a modification of the cleaning method is effective. Instead of a copper rod, a flat copper strip wrapped with acid-dampened asbestos or glass cloth may be used.

This copper strip is passed over the area to be cleaned. This method requires higher currents because of the larger contact area, but the same current density.

Armco also reports that the cleaning will remove light scale, but will not remove heavy scale or weld slag. Heavy deposits should be removed by chipping or brushing before the cleaning tool is used.

VANCORAM BRAND

Products for the Iron and Steel Industries

PRODUCT	TYPICAL COMPOSITION	APPLICATIONS
ALSIFER	Aluminum.....20% Silicon.....40% Iron.....40%	Used principally as a steel deoxidizer and for grain size control.
FERRO CHROMIUM High Carbon Grade	Chromium....66-70% Carbon.....4-6%	For wrought constructional steels and steel and iron castings.
Iron Foundry Grade	Chromium....62-66% Carbon.....4-6% Silicon.....6-9%	For alloyed cast irons. Readily soluble as a ladle addition at the lower temperatures of cast iron.
Low Carbon Grades	Chromium....67-72% Carbon...06%, .10%, .15%, .20%, .50%, 1.00% and 2.00% max.	For low carbon chromium steels, especially those with high chromium content, such as stainless and heat-resistant types.
FERRO CHROMIUM SILICON Low Carbon Grade	Chromium....39-42% Silicon.....40-42% Carbon....max. .06%	Used in stainless steel production to add chromium to the bath and reduce oxidized metals from slag.
Special Grades		For special applications.
FERRO SILICON 25-30% Grade	Silicon.....25-30%	Deoxidizer for open hearth steels; also for high silicon, corrosion-resistant iron castings.
50% Grade	Silicon.....47-52%	Used as a deoxidizer and for the addition of silicon to high silicon steels; added to cast iron for silicon content and for graphitization control.
75% Grade	Silicon.....74-79%	For high silicon content steels, such as spring steels, sheets and forgings of high magnetic qualities for electrical apparatus.
High Silicon Grades		
80-85%	Silicon.....80-84.9%	For high silicon content steels where small ladle additions are used for required silicon content.
85-90%	Silicon.....85-89.9%	
90-95%	Silicon.....90-95%	
FERRO TITANIUM High Carbon Grade	Titanium.....15-18% Carbon.....6-8%	Final ladle addition to control "rimming" action and to clean effervescing steel. Final deoxidizer and scavenger for steel castings and fully killed ingot steels.
Medium Carbon Grade	Titanium.....17-21% Carbon.....3-4.50%	Often preferred to the High Carbon Grade as a final ladle addition to very low carbon rimming or effervescing steels.
Low Carbon Grades 20-25% Ti Grade	Titanium.....20-25% Carbon...max. 0.10% Silicon.....max. 4% Aluminum max. 3.50%	Carbide stabilizer in high chromium corrosion-resistant steels of extremely low aluminum content. Deoxidizer for some casting and forging steels.
40% Ti Grade	Titanium.....38-43% Carbon...max. 0.10% Silicon.....max. 4% Aluminum...max. 8%	Carbide stabilizer in high chromium corrosion-resistant steels, where smaller ladle additions are desired and extremely low aluminum content is not essential.
ALUMINUM	Aluminum....85-99%	For deoxidation and grain size control of steel. (Ingot, shot, grain and special shapes.)
VANADIUM METAL		For iron-free, low-iron, or low-impurity alloys.
90% Grade	Vanadium.....91%	
95% Grade	Vanadium.....95%	
99.7% Grade	Vanadium.....99.7%	

PRODUCT	TYPICAL COMPOSITION	APPLICATIONS
FERRO VANADIUM Iron Foundry Grade	Vanadium....38-42% Silicon.....7-11% Carbon.....about 1%	For iron foundry use. Imparts remarkable improvement in physical properties with no sacrifice of machinability; highly soluble, insuring complete diffusion.
Grade "A" (Open Hearth)	Vanadium....35-45% 50-55% Silicon...max. 7.50% Carbon...max. 3.00%	For low percentage vanadium content of rolled, forged or cast constructional steels. Also used in vanadium cast irons.
Grade "B" (Crucible)	Vanadium....35-45% 50-55% Silicon...max. 3.50% Carbon...max. 0.50%	For tool steels and special high vanadium steels in which required limits for carbon and silicon are narrow.
Grade "C" (Primos)	Vanadium....35-45% 50-55% 70-80% Silicon...max. 1.25% Carbon...max. 0.20%	For tool steels and special steels requiring high percentages of vanadium and exceptionally low carbon and silicon content.
VANADIUM PENTOXIDE Technical Grade Fused Form	V_2O_5 ..88-92%	A source of vanadium in basic electric furnace steels. A base for numerous chemical compounds.
Technical Grade Air Dried Form	V_2O_5 .....83-85%	A base for preparation of numerous chemical compounds (catalysts, etc).
GRAINAL ALLOYS Vanadium Grainal No. 1	Vanadium....25.00% Aluminum....10.00% Titanium.....15.00% Boron.....0.20%	Practical and economical intensifiers for controlling and increasing the capacity of steels to harden, and for improving other important engineering and physical properties.
Vanadium Grainal No. 6	Vanadium....13.00% Aluminum....12.00% Titanium.....20.00% Boron.....0.20%	See above.
Grainal No. 79	Aluminum....13.00% Titanium.....20.00% Zirconium.....4.00% Manganese....8.00% Boron.....0.50% Silicon.....5.00%	See above.
GRAPHIDOX No. 4	Silicon.....48-52% Titanium.....9-11% Calcium.....5-7%	Efficient graphitizing inoculant in high strength cast irons; reduces chill and controls graphitization; used as a supplementary deoxidizer for cast steel.
V-FOUNDRY ALLOYS V-5 Grade	Chromium....38-42% Silicon.....17-19% Manganese....8-11%	Used in cast irons as a ladle addition. Reduces chill, promotes uniformity of structure, increases strength and hardness.
V-7 Grade	Chromium....28-32% Silicon.....15-21% Manganese...14-16%	See above.
BRIQUETTES Ferro Chromium	Hexagonal. Weigh approx. 3⅜ lb. and contain 2 lb. of chromium.	A practical and convenient form for adding ferro-alloys to the cupola.
Ferro Silicon	Two sizes, both cylindrical, one containing 1 lb. of silicon; the other, 2 lb. of silicon.	See above.
MISCELLANEOUS	Special ferro-alloys, metals, chemicals and carbides.	To meet individual requirements.

VANADIUM CORPORATION OF AMERICA

0 LEXINGTON AVENUE, NEW YORK 17, N. Y. · DETROIT · CHICAGO · CLEVELAND · PITTSBURG

All Things Considered

the Better Buys are

Warco® PRESSES and Federal® WELDERS

75-ton Double Crank Open Back Inclinable Press used for small miscellaneous stampings that are discharged through back of press.

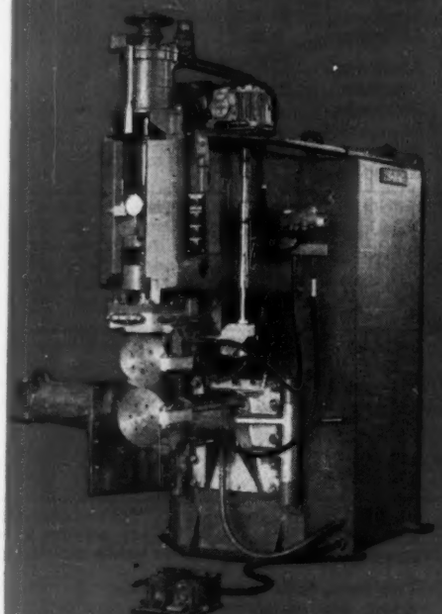
★ LOW UPKEEP—The simplicity of design found in all Federal Welders and Warco Presses means less chance of failure. There are no hard-to-service parts.

★ SIMPLICITY OF OPERATION—All Federal Welders and Warco Presses are designed for operational ease. Operator fatigue is held to a minimum.

★ VERSATILITY — Wherever possible Federal Welders and Warco Presses are designed for easy conversion from one type job to another.

★ LONG USE—Performance records plus high repeat order business of Federal Welders and Warco Presses speak for themselves.

★ INITIAL COST—The initial cost of a Federal Welder or a Warco Press is kept as low as modern production methods and material costs will allow. You might buy cheaper—but you can't get more for your money.



Three-phase Universal Seam Welder used for aluminum welding by leading aircraft manufacturers.

Federal® WELDERS

THE FEDERAL MACHINE & WELDER COMPANY
WARREN, OHIO

Warco® PRESSES

Make Your Own

Small end mills are being produced in the Small and Medium Motor Division of General Electric Co. by an ingenious method. Made of standard Carboloy 883 blanks, the mills are made by brazing this material into the slot in the head of a 10-32 round head screw. Blanks then are ground to shape and the end mill is finished. Use is for machining oil grooves in sleeve bearings.

CALENDAR OF MEETINGS

† Denotes first listing in this column.

†**Dec. 26-31, American Association of Advancement of Science:** Annual meeting, Convention Hall and University of Pennsylvania campus, Philadelphia. Association address is 1515 Massachusetts Ave., Washington 5, D. C.

Jan. 10-12, 1951, Southern Supply & Machinery Distributors' Association: Mid-year meeting, Edgewater Gulf Hotel, Biloxi, Miss. Association is located at 208 Peachtree arcade, Atlanta, Ga.

Jan. 14-16, Institute of Scrap Iron and Steel: Annual convention and exhibit of equipment manufacturers and suppliers. Location of institute is 1346 Connecticut Ave. N. W., Washington 6, D. C.

Jan. 15-16, Industrial Furnace Manufacturers Association: Mid-year meeting, Edgewater Beach Hotel, Chicago. Address of association is 420 Lexington Ave., New York 17.

Jan. 15-18, Plant Maintenance Show and Conference: Cleveland Public Auditorium. Clapp & Poliak Inc., 341 Madison Ave., New York 17, is managing the event.

†**Jan. 17, American Institute of Mining and Metallurgical Engineers:** Western section open hearth committee, Iron and Steel Division, Los Angeles. Address the AIME at 29 W. 39th St., New York 18.

†**Jan. 18-20, Society of Plastics Engineers:** Annual national technical conference, Hotel Statler, New York. Society is located at 160 Coit St., Irvington, N. J.

Jan. 22-26, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Address of institute is 33 W. 39th St., New York 18.

Jan. 22-26, American Society of Heating and Ventilating Engineers: 57th annual meeting and exposition, Commercial Museum, Philadelphia. Society address: 51 Madison Ave., New York 10. Exposition managed by International Exposition Co., 480 Lexington Ave., New York.

†**Jan. 25-26, Steel Plate Fabricators Association:** Meeting, Palmer House, Chicago. Address of society: 37 W. Van Buren St., Chicago 5.

Jan. 28-Feb. 1, Associated Equipment Distributors: 32nd annual meeting, Stevens Hotel, Chicago. AED is located at 360 N. Michigan Ave., Chicago 1.

†**Feb. 1-2, Society for Advancement of Management:** Annual spring management conference. Sponsored jointly with Northwestern University centennial committee. Chicago chapter of SAM is at 53 W. Jackson Blvd., Chicago 4.

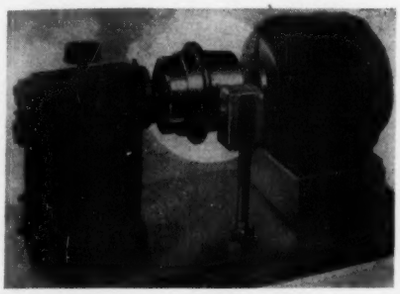
†**Feb. 8, American Coke & Coal Chemicals Institute:** Regional meeting, Congress Hotel, Chicago. Institute address is 711 14th St. N.W., Washington 5, D. C.

New Products and Equipment

Overload Cutout Coupling

Anchor Steel & Conveyor Co., 6909 Kingsley Ave., Dearborn, Mich., is offering an automatic device for machine tools, processing equipment, conveyors, etc., that instantly shuts off the power when an overload due to any cause occurs. It resets itself automatically, preventing sheared pins.

Unit combines features of a flexible coupling with the torque sensi-

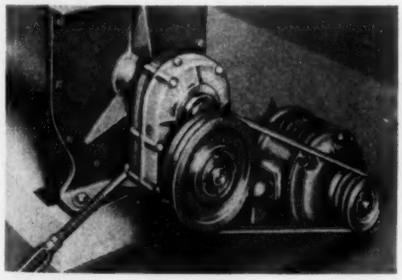


tive protection provided by the company's cutout pulley. Couplings are furnished in two sizes and with working ranges from 10 to 2000 inch-pounds torque.

Check No. 1 on Reply Card for more Details

Torque Arm Reducer

Being produced in four sizes, covering capacities up to 27 hp is a torque-arm reducer for output speeds from 115 to 330 rpm, product of Dodge Mfg. Corp., Mishawaka, Ind. Ease of installation eliminates special engineering and the time consumed in



lining up the units. It is locked to the shaft to be driven by means of two steel locking collars, one on each side of the reducer. It is anchored to the floor or any other fixed object by the torque-arm.

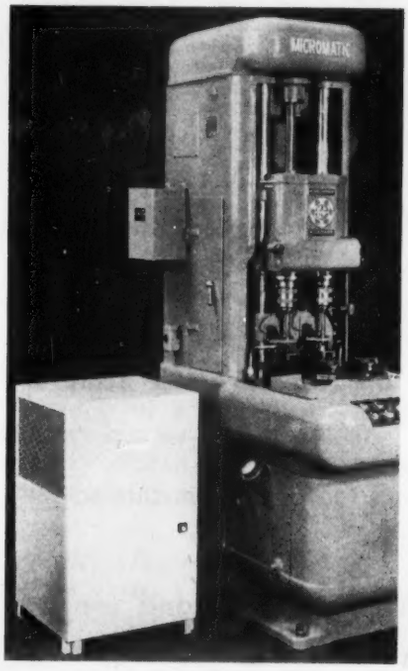
While the reducer can be driven through any V-belt drive, it may also be driven by taper-lock sheaves or flat belt drive. Any required output speed within the recommended range can be obtained with stock sheaves properly related to size. Speed variations are accomplished by changing sheave sizes. Transferring the unit from one machine to another is simplified by use of interchangeable shaft keyed bushings.

Check No. 2 on Reply Card for more Details

Coolers Cool Coolant

Designed to accurately control the temperature of coolants used in honing, grinding and cutting, as well as water, hydraulic oils and plating solutions, is the Frostrode fluid cooler made by Frostrode Division, Viking Products, Vicksburg, Mich. Coolers use an air-cooled refrigeration cycle, the flow circuit providing a maximum heat transfer with a minimum pressure drop or flow restriction.

Coils are constructed of either steel or copper tubing. Cooling of coolant



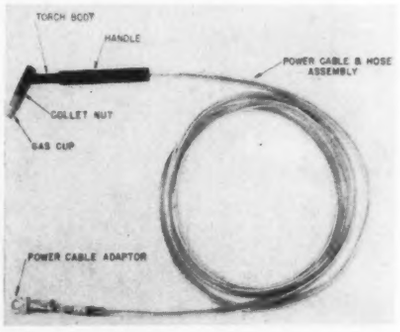
results in higher production rate, closer working tolerance on work piece, higher quality finish on work piece, decreased number of rejects, increased tool life and decreased tool maintenance.

Check No. 3 on Reply Card for more Details

Lightweight Welding Torch

Offered with a two-position welding head and requiring no water cooling is a lightweight air-cooled Heliarc torch for inert gas shielded arc welding, produced by Linde Air Products Co., 30 E. 42nd St., New York 17, N. Y. It has a maximum current capacity for continuous duty of 75 amp and is designed for welding thin gage materials. Torch head and handle assembly of the HW-9 torch weigh three ounces. For normal welding operations torch head is set at 120 degrees downward from the handle as shown, but may be changed to a 60-degree backward angle from the handle.

Steel collets are available for 0.020, 0.040, and 1/16-inch diameter elec-

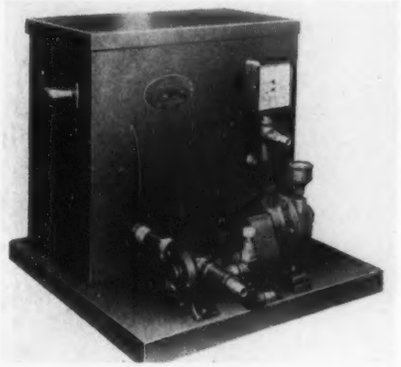


trodes. Torch is equipped with a single cable carrying both power and gas. Cable is 12½ feet long, but a 24 foot cable and hose assembly is available.

Check No. 4 on Reply Card for more Details

Heater Supplies Hot Paint

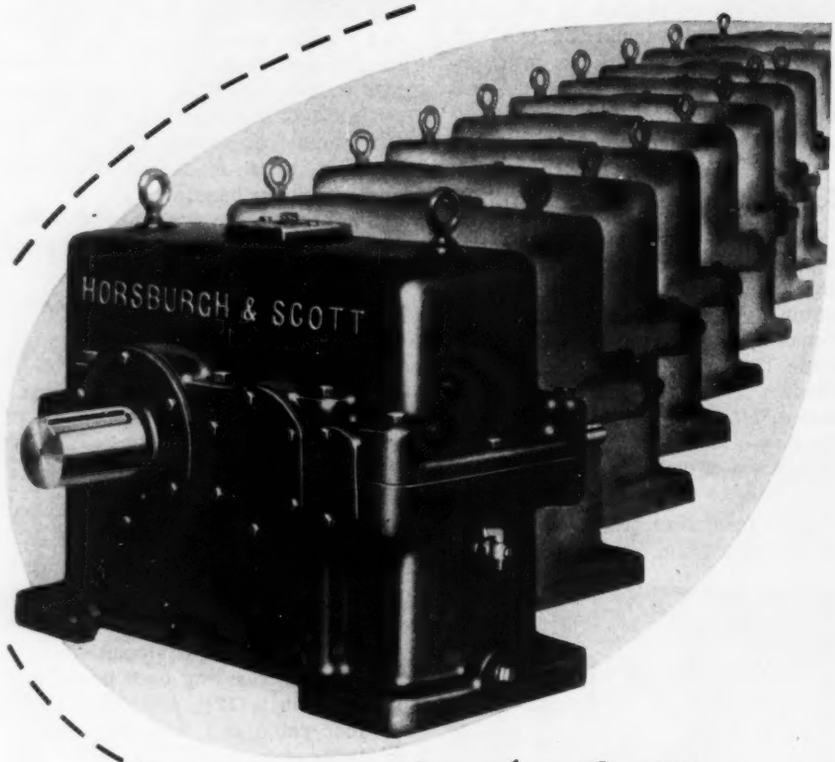
Designed to supply a large volume of hot paint for installations using two or more spray guns is a double unit paint heater, introduced by Bede Products Inc., 4311 Ridge Rd., Cleveland 9, O. Unit will supply 24 to 28 gallons per hour. Heater consists



of two heating units mounted on a common base with a standard Bede circulating arrangement. Paint is heated to 160 to 200° F.

Constant circulation of the paint is provided to minimize temperature drop in paint lines to the spray guns. Paint can be drawn directly from original paint container without use of a pressure tank. Use may be for

HELICAL SPEED REDUCERS



by Horsburgh & Scott

LEAD THE PARADE FOR ECONOMY

- **It's a two-way saving on Horsburgh & Scott Helical Speed Reducers:**

1. Simplicity of design lowers the cost of manufacture and assembly.

2. Rugged construction, finest materials and precision manufacture, minimize maintenance.

These features are your guarantee of better built speed reducers that are economical in first cost and throughout their long life.

Send note on Company Letterhead for Speed Reducer Catalog 46

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

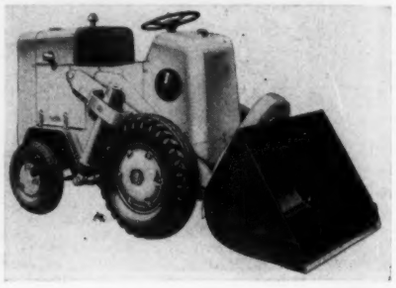
5112 HAMILTON AVENUE • CLEVELAND 14, OHIO, U. S. A.

spraying almost every type of finish, the heater having provision for heating both paint and air. Paint coils are made of a special alloy steel that will not tarnish lacquers or delicate colors.

Check No. 5 on Reply Card for more Details

Tractor Shovel

Foundries and other manufacturing plants handling bulk materials will find use for the improved model HA Payloader tractor shovel, a 12 cu ft unit made by Frank G. Hough Co., 876 Sunnyside Ave., Libertyville, Ill. Faster and more powerful, the machine is equipped with a high-



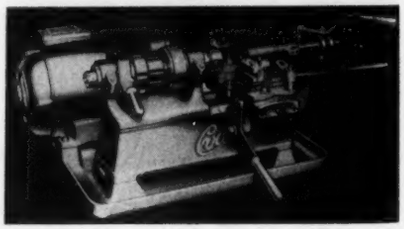
er compression engine and a larger clutch.

Operator's compartment is roomier and more comfortable and steering gear and linkage has been made more rugged. Other improvements include stronger main frame, constant mesh transmission and greater accessibility of engine and other parts.

Check No. 6 on Reply Card for more Details

Second Operation Bench Lathe

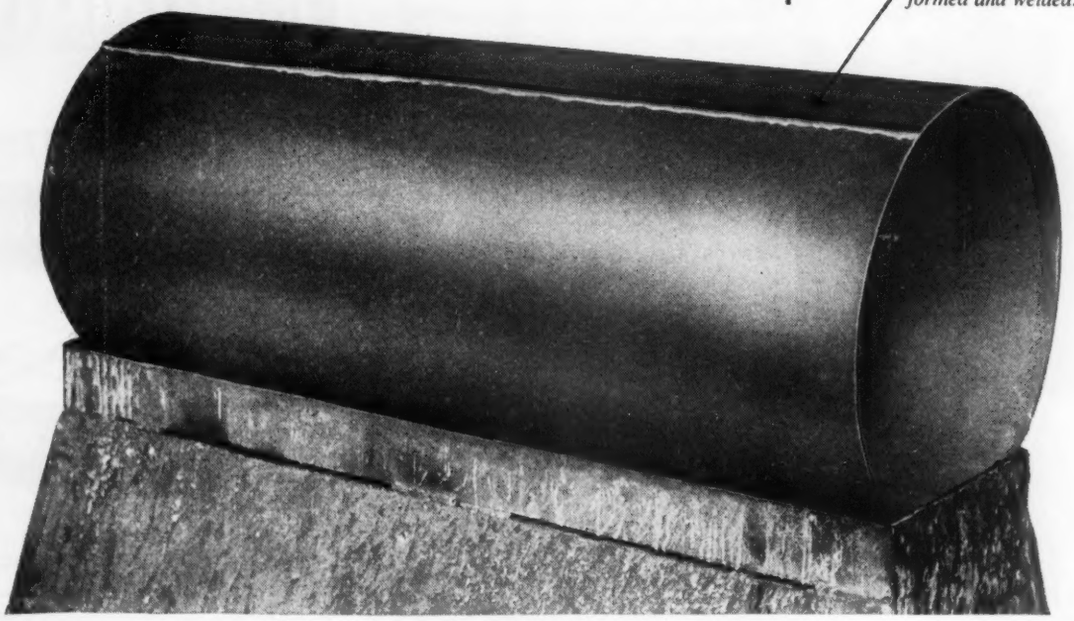
Collet attachment, tailstock and compound slide on which the front and rear toolholders are adjustable for height are lever operated on the second operation bench lathe made



available by DCMT Sales Corp., 164 Duane St., New York 13, N. Y. Angular adjustments up to 22 degrees left and 33 degrees right can be set on the front tool slide; adjustable dead stops are provided for both compound slide and tailstock.

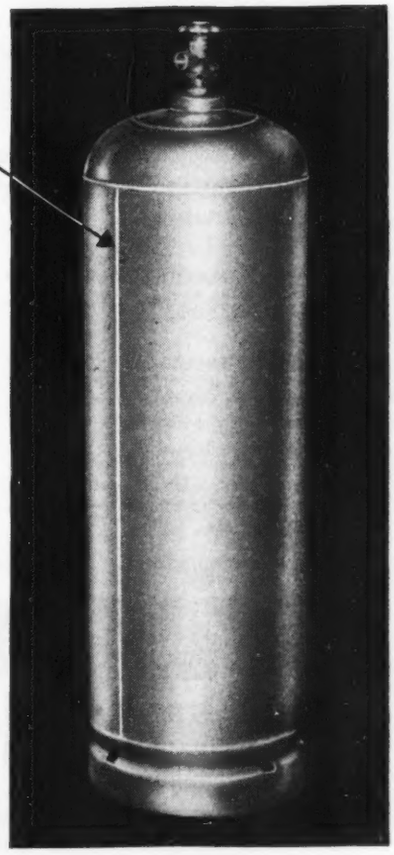
Drive from the two-speed motor to the main spindle is in adjustable bronze bearings, power being trans-

We laid a bronze welding rod in the Customer's lap



Cylinder shell formed and welded.

Cylinder welded and finished, ready for shipment.



The problem was to braze the 30 in. longitudinal lap seam in these steel gas cylinders produced by the Steel Cooperage Company Division of Industrial Stamping & Manufacturing Company of Detroit.

An ANACONDA Technical Department welding specialist suggested preplacing a 30 in. length of ANACONDA Deoxidized Copper-939 Welding Rod on the lap seam and passing the shell between gas-fired burners. The filler metal, of a diameter to supply just the right amount of metal, melts and is drawn into the seam by capillary action. Production of several hundred units per eight-hour day is constantly maintained.

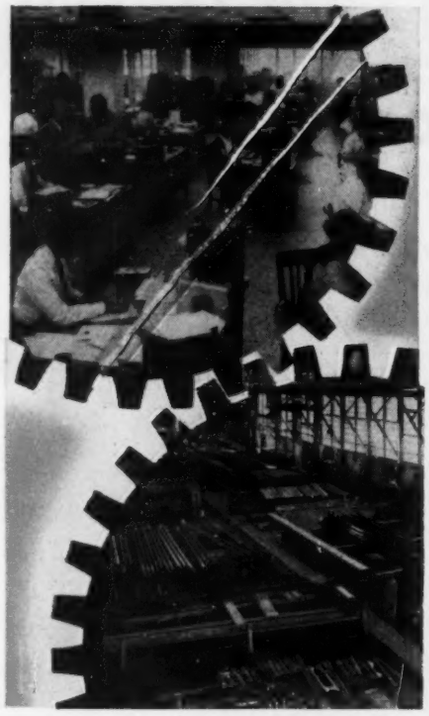
Simple. Economical. Profitable. Other production welding jobs can easily be handled similarly with good results. ANACONDA Welding Rod specialists are ready to help you on such jobs—or any other welding problems. Get in touch with them now. ANACONDA Welding Rods are sold by distributors throughout the United States.
The American Brass Company, Waterbury 20, Connecticut.
In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

50194

You can depend on

ANACONDA®

bronze welding rods



Geared

TO TODAY'S CONDITIONS

Once again the Nation is confronted with an almost war-time emergency. Once again metals are difficult to procure. Here at Levinson our entire organization has already been geared to meet today's new problems. Conditions may have changed but Levinson's policy of close customer cooperation never changes. *This means . . .*

1. We will use every means at our command to try to supply our customers, even on a limited basis.
2. We will spare no effort to help you work out any of your problems in connection with the economical use of metals.
3. We will never deviate from our long established policy of never charging a premium for anything—*regardless of conditions.*

LSS-7

Levinson

STEEL SALES CO.

20TH AND WHARTON-STS., S. S.

PITTSBURGH, PA.

Warehouse Aluminum & Steel Products

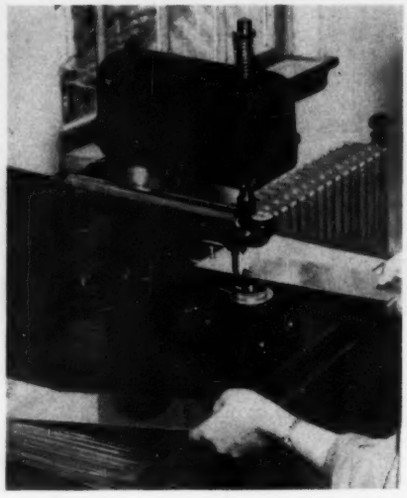
mitted by a flat belt with adjustable pulley for tensioning. Lathe is offered with a ¾-hp motor for 220 v, 3 phase, 60 cycle ac. Maximum distance from tailstock to headstock is 2¾ inches. Spindle speeds are 1020 and 2010 rpm.

Check No. 7 on Reply Card for more Details

Rapid Hardness Tester

By means of conversion chart supplied with an automatic certifying hardness tester announced by Topflight Tool Co. Inc., 116 E. Market St., York, Pa., Brinell, Rockwell or Vickers numbers can be certified. The hardness testing assembly includes an adaptation of a Barcol unit and can be set for the desired hardness.

Pieces to be inspected are fed between a needle and the point anvil;



when the point contacts the part the dial reading is visible and a green light flashes if the piece is of the required thickness. A stamp then automatically certifies the piece and at the same time a counting device registers the total pieces inspected. If not of the required thickness, the light will not flash, the die and counter will not function. The whole operation is automatic, except for feeding the parts.

Check No. 8 on Reply Card for more Details

Efficient High Pressure Pump

Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y., is announcing a line of multistage centrifugal pumps for high-pressure applications to 1200 psi and capacities to 1600 gallons per minute. The class HMTA pumps are built in 3, 4, 5, and 6-inch sizes with from three to nine stages. Applications include boiler feed, pipe-line pumping as well as other general high-pressure industrial services.

Features include cylindrical-bore,

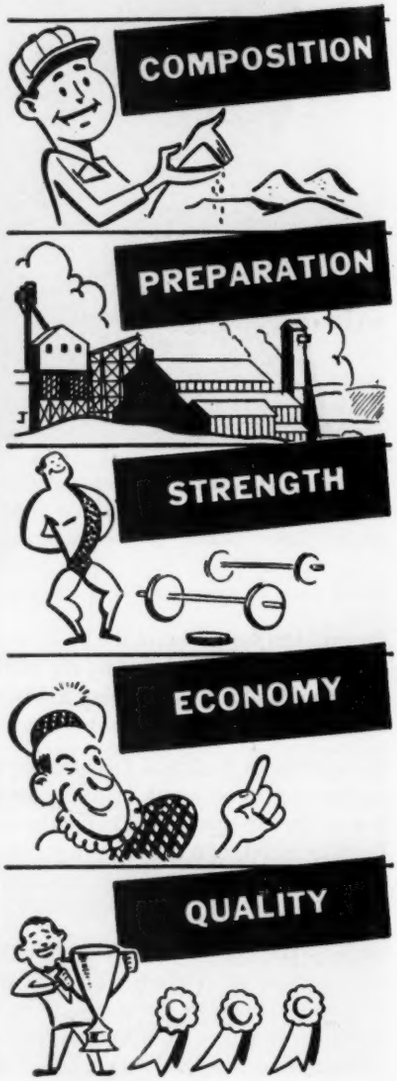
The original dead-burned dolomite refractory

BAKER'S

MAGDOLITE

always

5 WAYS BETTER



JEBCO PRODUCTS

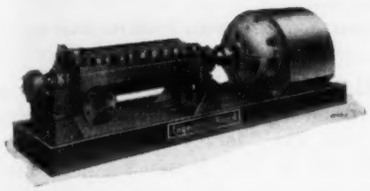
Plants: Billmeyer, Pennsylvania; Millersville, Ohio

Makers of Baker's Magdolite

THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA

horizontally-split casing and compact unit-type rotor assembly composed of shaft, impellers and channel rings. Channel ring sections contain multiple volutes and fluid passages, as well as the renewable wearing parts for each stage. Entire rotor as-



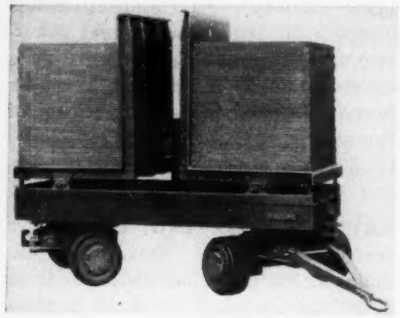
sembly is easily removed and installed in the smooth-bore casting. The balanced rotor eliminates radial thrust in all conditions of operation. A hydraulic balancing drum counteracts axial thrust.

Check No. 9 on Reply Card for more Details

Transports 15-Ton Sheet Load

Phillips Mine & Mill Supply Co., 2309 Jane St., Pittsburgh 3, Pa., is manufacturing a 15-ton capacity trailer for the transportation of oiled steel sheets. Tractor-drawn unit has two removable hydraulically operated tilting racks.

After being loaded with sheet, these racks are tilted toward the



center of the trailer by means of a hydraulic mechanism. This eliminates danger of the oiled sheets slipping off during transport. Trailer is equipped with solid rubber-tired wheels, has a deck length of 7 feet 6 inches, a width of 36 inches and a height of 24 inches.

Check No. 10 on Reply Card for more Details

Prefabricated Racks and Shelves

Prefabricated pallet racks and shelves that eliminate folding or welding in joining beds and uprights and which may be easily dismounted without cutting are being offered by American Sales Engineers, 141 W. Eight Mile Rd., Detroit 3, Mich., distributors for American Metal Products Co., Detroit, Mich. Of all-weld-

The ABC of MST

ALWAYS MAKES POSSIBLE BETTER PRODUCTS AT LOWER COST

Michigan
The Modern Electric Resistance
WELDED
STEEL TUBING

ECONOMICAL • LIGHT WEIGHT • MACHINE • ABILITY • UNIFORM STRENGTH

ROUND
3/8" to 4" O. D. 9 to 22 gauge
SQUARE-RECTANGULAR
½" to 2" 20 gauge 1" to 2¾", 14, 16, 18 gauge

Can be Bent,
FLANGED, EXPANDED, TAPERED, DEPRESS BEADED, EXPAND BEADED, ROLLED, EXTERNAL UPSET, INTERNAL UPSET, SPUN CLOSED, FORGED, BEVEL FLANGED, FLATTENED, SWAGED, FLUTED.

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

At MICHIGAN we've never admitted there are such words as, "It can't be done!" That's why we've convinced thousands of manufacturers that MICHIGAN TUBING is an ideal, cost-saving product component. No matter what you manufacture, let us prove that the use of MICHIGAN TUBING can give you a better product and save you money.

A Quality Product, can be worked in your plant or prefabricated by MICHIGAN.

RESISTANCE-WELDED STEEL TUBING
Michigan STEEL TUBE PRODUCTS CO.
THE OLDEST NAME IN ELECTRIC

33 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN • SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland, Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American Tubular & Steel Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—A. J. Fitzgibbons Co., Buffalo, N. Y.

ed steel construction, the equipment makes use of C-channels on the ends of each pallet bed, these being fitted into tubular uprights and locking securely in place. This is accomplished by an indentation in the legs of the uprights that presses the channels together.

Disassembly is by unlocking the channels from the tubular uprights. Racks may be tiered to any desired height. There are five standard rack sizes and special channels and tube sizes for varying load conditions. The wide variety of deck material for the shelf surface is available, including sheet steel, plywood and board.

Check No. 11 on Reply Card for more Details

• • •

NO RUST: Derusto, a protective coating manufactured by Master Bronze Powder Co., Hammond, Ind., prevents, absorbs and stops rust on either new or rusted surfaces. It resists acid fumes and alkali solutions. The paint is available in standard industrial colors. It is self-leveling and may be applied by brushing, spraying or dipping.

Check No. 12 on Reply Card for more Details

FOR NUT SETTING JOBS: Designed for heavy duty nut setting jobs on heavy automotive equipment, a new Thor ⅝-inch, Silver Line universal electric impact wrench is offered by Independent Pneumatic Tool Co., Aurora, Ill. Operating at 2000 rpm, it will deliver 1850 impact blows per minute both forward and reverse. The tool is also equipped with a detachable dead handle for easier handling.

Check No. 13 on Reply Card for more Details

SMALL PRONG DIES: Small prong dies, available from Woodruff & Stokes Co., Quincy 69, Mass., are made with 36 to 360 threads per inch in diameters from 0.250 to 0.016-inch. Tolerances can be held to plus or minus 0.0002-inch on pitch diameter. They are for use with B & S automatic, and hand screw machines, Swiss type screw machines and for hand use.

Check No. 14 on Reply Card for more Details

NO SCALE, NO SLUDGE: Designated as Aluminux, a new type alkaline etching compound for aluminum alloys is offered by Diversey Corp., Chicago 13, Ill. Its use will eliminate cement-like scale and sludge from tanks and coils.

Check No. 15 on Reply Card for more Details

DRILLS HOLES IN CONCRETE: Model No. 10-RO, a new electromagnetic hammer drill introduced by Syntron Co., Homer City, Pa., is for high speed hole drilling in concrete, brick and stone. The automatic rotation of the carbide-tipped spiral drill speeds up hole drilling and eliminates manual turning of drill chuck.

Check No. 16 on Reply Card for more Details

FOR LONG-RANGE READINGS: Designated as types AB-16 (ac) and DB-16 (dc), a new line of 8¾-inch, long scale switchboard instruments is announced by General Electric's Meter and Instrument Divisions, Schenectady 5, N. Y. Designed primarily for applications where long-range readings must be taken, the instruments employ 250-degree scales 14.2 inches long.

Check No. 17 on Reply Card for more Details

SAFEGUARDS FOR BURNERS: For positive acting flame failure safeguards and control of gas-oil conversion burners, Combustion Control Corp., Cambridge 42, Mass., offers a system for supervising both pilot gas flame and main flame on industrial gas-oil burner installations.

Check No. 18 on Reply Card for more Details

ONE-SIDED FASTENER: Particularly suitable for blind applications, a new fast driving, one-sided fastener is available from Rocket Distributors Inc., Bayside, L. I., N. Y. Design characteristics preclude splitting on the upset side. It is supplied in sizes ⅛, 5/32, 3/16 and ¼-inch, aluminum or steel, countersunk or brazier head.

Check No. 19 on Reply Card for more Details

HAS INTERCHANGEABLE LENS: Saf-I-Duo, an all plastic safety goggle with replaceable and interchangeable one-piece lens, is available from United States Safety Service Co., Kansas City 6, Mo. Lens in the safety goggle are interchangeable with lens in the Saf-I-Spec, a companion safety spectacle. Lens is available in Optilit for impact protection or acid resistant plastic for use around chemicals.

Check No. 20 on Reply Card for more Details

CONTROL VALVES: Series 1200 and 1400 diaphragm control valves are available from Kieley & Mueller, North Bergen, N. J. The diaphragm motor embodies the accessibility and other desirable features of the "open yoke", together with strength and resistance to shock found in steel. Boltless casing assembly is constructed with an exclusive clamping ring, which permits inspection and reassembly.

Check No. 21 on Reply Card for more Details

CLEANING CHEMICAL: Detrex Corp., Detroit 32, Mich., offers a multipurpose cleaning chemical known as Detrex 10. It may be used as a medium duty soak tank cleaner, electrolytic cleaner for ferrous metal parts and as a water conditioner for all types of water-wash paint spray booths.

Check No. 22 on Reply Card for more Details

BLOW-OFF VALVE: Straightway Y type valves, made by Everlasting Valve Co., Jersey City, N. J., are offered in 1½, 2 and 2½-inch sizes, in cast iron or cast steel, for pressures up to and including 600 pounds. The head is made of H Monel metal and the seat, which is renewable, of Monel metal.

Check No. 23 on Reply Card for more Details

SPEED REDUCERS: An improved line of speed reducers is offered by Boston Gear Works, Quincy 71, Mass. The T series, horizontal right angle drive Reductors have gear ratios ranging from 1 to 1 up to 4000 to 1; output speeds, based on full load motor speeds, from 0.45 to 588.23 rpm.

Check No. 24 on Reply Card for more Details

STUD DRIVER, REMOVER: AR series collet type stud driver is introduced by Titan Tool Co., Fairview (Erie County), Pa. Mutilation and scraping of stud threads and distortion of cutter key holes are eliminated as stud is driven by pitch diameter pressure instead of pressure on top of the stud.

Check No. 25 on Reply Card for more Details

BRUSH-ON COATING: Phenoline, a corrosion resisting coating, is announced by Carboline Co., St. Louis 5, Mo. It is applied by brush in coats 0.010-inch thick and hardens at normal temperatures into a tile-like coating that is impervious to practically all solvents and inorganic and organic acids, except strong oxidizing solutions. Available in colors, it may be used for lining unjacketed tanks, hydrochloric acid and solvent storage tanks. on concrete and wood floors.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

WITH defense requirements mounting in step with deteriorating world political conditions, the steel markets are beginning to assume wartime pattern. Diversion of tonnage to military and related consumption already is resulting in manufacturing dislocations which promise to intensify as the weeks pass. Steel distribution pattern in first quarter next year will differ noticeably from that prevailing in the period now ending. And really material changes are indicated for second quarter, not only in the character of the demand load on the steel mills, but in the manner in which tonnage is channeled into consumption as well.

CONTROLS—Under existing law President Truman has vast powers to control the nation's economy which need no proclamation of national emergency to bring into effect. These include the freezing of wages and prices, and the allocation of scarce materials. How quickly such controls will be applied is a matter for conjecture in the present unsettled state of affairs, but it is believed certain in some informed quarters that return to the Controlled Materials Plan, or something similar, in the distribution of steel will come within the next 60 days.

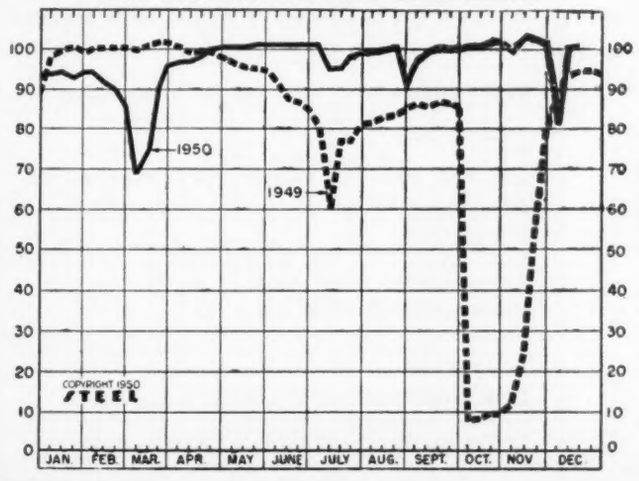
DEMAND—Frantic scramble of consumers to get in as much steel as possible before straitjacket government controls are slapped on supplies continues. Non-rated buyers are scouring the markets for tonnage to care for their current needs. Appeals for aid in obtaining supplies of pig iron, steel and other scarce materials are beginning to flood into Washington. And conditions promise to worsen progressively from here on as manufacturers get closer the bottom of inventories. Less and less steel will be available for civilian goods production with additional government allocation programs in the offing.

ALLOTMENTS—With elapse of the minimum lead time of 45 days on tonnage, the steel mills are setting up full allocations for February. They are allocating tonnage still further ahead where lead time is longer and where monthly minimum quotas have been filled, in some products several months ahead. Minimum DO quotas on hot and cold-rolled sheets have been advanced from 5 to 10 per cent, but producers report additional rated business has developed so rapidly that they are now booked about as far ahead as they were when the quota change went into effect. Civilian goods manufacturers' quotas for February are further reduced, in some products more sharply than in others.

PRICES— The steel market is rapidly stabilizing at the higher price levels effected beginning Dec. 1. Interest now is centering on possible government price control action, considerable speculation being present as to whether there will be a rollback of prices to pre-Korean days. With additional producing companies issuing new schedules, STEEL's arithmetical price composite on finished steel last week rose to $103.50 from $100.53 the preceding week and compares with $91.64 a year ago. The weighted index on finished steel is unchanged at 167.67 and compares with 157.76 a month ago, 152.52 a year ago, and 101.87 five years ago. Pig iron composites are holding with No. 2 foundry, $52.54, basic, $52.04, and malleable, $53.27. The market for steelmaking scrap has stabilized under the revised pricing formula but foundry grades continue to soar. Talk of a rollback of prices in event of government control is increasing in this market. Last week STEEL's composite on steelmaking scrap held at $45.50, which compares with $41.67 a month ago, and $28.25 a year ago.

PRODUCTION—Steelmaking operations rose ½ point last week to 101.5 per cent of capacity, equal to output of over 1,950,000 net tons. The all-time high was attained during the week ended Nov. 11 at 103.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Dec. 16	Change	Same Week 1949	Same Week 1948
Pittsburgh	102.5	+ 4*	96	96
Chicago	105	+ 5*	97.5	98
Eastern Pa.	100	0	83	97
Youngstown	104	0	95	105
Wheeling	100	+ 6	99	94.5
Cleveland	100.5	— 1.5*	98	96.5
Buffalo	104	0	103.5	104
Birmingham	100	0	100	100
New England	90	+ 2	85	89
Cincinnati	102	0	104	99
St. Louis	86	— 4.5	89.5	89.5
Detroit	106	0	107	103
Western	105	+ 3	91	..
Estimated national rate	101.5	+ 0.5	94.5	99.5

Based on weekly steelmaking capacity of 1,906,268 net tons for first half and 1,928,721 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. * Change from revised rate.

News Summary—p. 63 *Production-Engineering News—p. 93*

Composite Market Averages

	Dec. 14 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)..	167.67	167.67	157.76	152.52	101.87
Index in cents per lb.	4.545	4.545	4.274	4.132	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$103.50	$100.53	$95.09	$91.64	$58.27
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	49.54	46.10	25.42
Basic Pig Iron, GT	52.04	52.04	49.04	45.60	24.75
Malleable Pig Iron, GT....	53.27	53.27	50.27	47.27	26.04
Steelmaking Scrap, GT ...	45.50	45.50	41.67	28.25	19.17

† Preliminary

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point. All prices for latest week preliminary.

FINISHED MATERIALS

	Dec. 14 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.70	3.70	3.45	3.35	2.25
Bars, H.R., Chicago	3.70	3.70	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	4.18	4.18	3.93	3.83	2.57
Bars, C.F., Pittsburgh.....	4.55	4.55	4.15	3.95–4.00	2.75
Shapes, Std., Pittsburgh ..	3.65	3.65	3.40	3.25	2.10
Shapes, Std., Chicago	3.65	3.65	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.90	3.90	3.65	3.50	2.215
Plates, Pittsburgh	3.70	3.70	3.50	3.40	2.25
Plates, Chicago	3.70	3.70	3.50	3.40	2.25
Plates, Coatesville, Pa. ...	4.15	4.15	3.90	3.50	2.25
Plates, Sparrows Point, Md.	3.70	3.70	3.50	3.40	2.25
Plates, Claymont, Del. ...	4.15	4.15	3.90	3.50	2.25
Plates, del. Philadelphia ..	...	3.79	3.79	3.59	2.30
Sheets, H.R., Pittsburgh..	3.60–75	3.60–75	3.35	3.25	2.20
Sheets, H.R., Chicago	3.60	3.60	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.10	4.00	3.05
Sheets, C.R., Chicago	4.35	4.35	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.80	4.80	4.40	4.40	3.70
Strip, H.R., Pittsburgh....3.75–4.00		3.75–4.00	3.50–75	3.25	2.10
Strip, H.R., Chicago	3.50	3.50	3.25	3.25	2.10
Strip, C.R., Pittsburgh 4.65–5.25		4.65–5.25	4.15–4.85	4.00	2.80
Strip, C.R., Chicago 4.50–4.90		4.30–90	4.30	4.00–15	2.90
Strip, C.R., Detroit 4.35–5.60		4.35–5.45	4.35–5.10	4.20–25	2.90
Wire, Basic, Pittsburgh ..4.85–5.10		4.85–5.10	4.50–75	4.15	2.75
Nails, Wire, Pittsburgh....5.90–6.20		5.90–6.20	5.30–60	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$66.00	$63.00	$63.00	$61.00	$42.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts....	4.10–30	4.10–30	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$50.00	$47.00	$26.25
Basic, Valley	52.00	52.00	49.00	46.00	25.25
Basic, del. Phila.	56.39	56.39	53.39	49.44	27.09
No. 2 Fdry, Pitts.	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Chicago	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Valley	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Del. Phila. ...	56.89	56.89	53.89	49.94	27.59
No. 2 Fdry, Birm.	48.88	48.88	45.88	39.38	22.13
No. 2 Fdry (Birm.) del. Cin.	55.58	55.58	52.58	46.08	25.81
Malleable Valley	52.50	52.50	49.50	46.50	25.75
Malleable, Chicago	52.50	52.50	49.50	46.50	25.75
Charcoal, Lyles, Tenn.	66.00	66.00	62.00	60.00	33.00
Ferromanganese, Etna, Pa.	188.00	188.00	175.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts..	$46.50	$46.50	$44.00	$32.00	$20.00
No. 1 Heavy Melt. E. Pa..	45.00	45.00	41.00	24.75	18.75
No. 1 Heavy Melt. Chicago	45.00	45.00	40.00	29.00	18.75
No. 1 Heavy Melt. Valley.	46.25	46.25	43.75	32.75	20.00
No. 1 Heavy Melt. Cleve...	45.75	45.75	43.25	30.25	19.50
No. 1 Heavy Melt. Buffalo.	49.88	41.50	41.50	29.75	19.25
Rails, Rerolling, Chicago..	67.00	65.50	64.50	43.50	22.25
No. 1 Cast, Chicago	63.00	62.00	59.00	42.50	20.00

COKE, Net Ton

Beehive, Furn., Connisvl...	$14.75	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connisvl...	16.75	16.50	16.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	16.80	11.80	6.35
Tin, New York 142.00		140.00	132.00	79.00	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	32.00	32.00	32.00	14.50
Nickel, refinery, duty paid.	50.50	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$55.50
Brooklyn,N.Y.,del.	....	58.79	59.29	....
Newark,del.	56.63	57.13	57.63	58.13
Philadelphia,del.	56.39	56.89	57.39	57.89
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward,Ala. W15	48.38	48.88	....	....
Cincinnati,del.	....	55.58	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda,N.Y., W12	52.00	52.50	53.00	....
No.Tonawanda,N.Y., T9	....	52.50	53.00	....
Boston,del.	61.26	61.76	62.20	....
Rochester,N.Y.,del.	54.63	55.13	55.63	....
Syracuse,N.Y.,del.	55.58	56.08	56.58	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. C3	52.00	....	52.50	....
IndianaHarbor,Ind. I-2	52.00	....	52.50	....
So.Chicago,Ill. W14	52.00	52.50	52.50	....
So.Chicago,Ill., Y1	52.00	52.50	52.50	....
So.Chicago,Ill. C3	52.00	....	52.50	53.00
Milwaukee,del.	53.89	54.39	54.39	54.89
Muskegon,Mich.,del.	....	57.98	57.98	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, del. from Cleve.	54.39	54.89	54.89	54.39
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	52.25	52.75	....
Fontana,Calif. K1	*58.00*	*58.50*	....	....
Geneva,Utah G1	52.00	52.50	....	....
Seattle,Tacoma,Wash.,del.	....	60.20	....	....
Portland,Oreg.,del.	....	60.20	....	....
LosAngeles,SanFrancisco,del.	59.70	60.20	....	....
GraniteCity,Ill. M10	53.90	54.40	54.90	....
St.Louis,del. (inc. tax)	54.65	55.15	55.65	....
Ironton,Utah C11	52.00	52.50	....	....
LoneStar,Tex. L6	48.00	*48.50	48.50	....
Minnequa,Colo. C10	*54.00*	*55.00*	*55.00*	....
Pittsburgh District				
Nevilleisland,Pa. P6	....	52.50	52.50	53.00
Pitts.,N&S. sides, Ambridge, Aliquippa, del.	....	53.69	53.69	54.19
McKeesRocks,del.	....	53.45	53.45	53.95
Lawrenceville,Homestead, McKeesport,Monaca,del	....	53.94	53.94	54.44
Verona,del.	....	54.40	54.40	54.90
Brackenridge,del.	....	54.63	54.63	55.13
Bessemer,Pa. C3	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. C3	52.00	....	....	....
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	*54.00*	....		
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati,del.	57.01	57.51	....	....
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Mansfield,O.,del.	56.26	56.76	56.76	57.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	*$62.50*
Buffalo H1	*63.75*

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls,N.Y. P15	$83.00
Keokuk,Iowa, Openhearth & Fdry, frt, allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb. piglets, 16% Si, frt. allowed K2	95.50
Wenatchee,Wash., O.H. & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$66.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton,Pa. B2	60.00
Philadelphia delivered	63.00
Troy,N.Y. R2	60.00

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

Semifinished and Finished Steel Products

Mill prices as reported to STEEL Dec. 14, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$76.00
Munhall,Pa. C3 ....52.00

INGOTS, Alloy (NT)
Detroit *R1* $54.00
Fontana,Calif. K1 ....*77.00*
Houston,Tex. S5 ....*62.00*
Midland,Pa. C18 ....54.00
Munhall,Pa. C3 ....54.00
So.Duquesne,Pa. C3 ....54.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)
Bessemer,Pa. C3 ....$56.00
Clairton,Pa. C3 ....56.00
Ensley,Ala. T2 ....56.00
Fairfield,Ala. T2 ....56.00
Fontana,Calif. K1 ....*75.00*
Gary,Ind. C3 ....56.00
Johnstown,Pa. B2 ....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. C3 ....56.00
So.Chicago,Ill. C3 ....56.00
So.Duquesne,Pa. C3 ....56.00

Carbon, Forging (NT)
Bessemer,Pa. C3 ....$66.00
Buffalo R2 ....66.00
Canton,O. R2 ....66.00
Clairton,Pa. C3 ....66.00
Cleveland R2 ....66.00
Conshohocken,Pa. A3 ..73.00
Detroit R7 ....69.00
Ensley,Ala. T2 ....*66.00*
Fairfield,Ala. T2 ....66.00
Fontana,Calif. K1 ....*85.00*
Gary,Ind. C3 ....66.00
Geneva,Utah G1 ....66.00
Houston,Tex. S5 ....*74.00*
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 ....85.00
Munhall,Pa. C3 ....66.00
Seattle B3 ....85.00
So.Chicago C3, R2 ....66.00
So.Chicago W14 ....63.00
So.Duquesne,Pa. C3 ....66.00
So.SanFrancisco B3 ....85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$70.00
Buffalo R2 ....70.00
Canton,O. R2 ....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 ....73.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 ....70.00
Houston,Tex. S5 ....*78.00*
Ind.Harbor,Ind. Y1 ....66.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2 ..70.00
Los Angeles B3 ....90.00
Massillon,O. R2 ....70.00
Midland,Pa. C18 ....70.00
Munhall,Pa. C3 ....70.00
So.Chicago C3, R2 ....70.00
So.Chicago W14 ....66.00
So.Duquesne,Pa. C3 ....70.00
Warren,O. C17 ....66.00
Youngstown Y1 ....66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ....$82.00
Cleveland R2 ....82.00
Fontana,Calif. K1 ...100.00
Gary,Ind. C3 ....82.00
Massillon,O. R2 ....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. C3 ...82.00

SHEET BARS (NT)
Fontana,Calif. K1 ....$86.00

SKELP
Aliquippa,Pa. J5 ....3.45
Munhall,Pa. C3 ....3.35
Warren,O. R2 ....3.35
Youngstown C3, R2 ....3.35

WIRE RODS
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 ....3.85
Cleveland A7 ....4.10
Donora,Pa. A7 ....4.10
Fairfield,Ala. T2 ....4.10
Fontana,Calif. K1 ....4.60
Houston,Tex. S5 ....*4.50*
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 ....4.10
LosAngeles B3 ....4.90
Minnequa,Colo. C10 ....*4.35*
Monessen,Pa. P7 ....4.30
No.Tonawanda,N.Y. B11.3.85
Pittsburg,Calif. C11 ...4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 ....*4.20*
So.Chicago,Ill. R2 ....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 ....*4.10*
Torrance,Calif. C11 ....4.90
Worcester A7 ....4.40

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ....*3.70*
Aliquippa,Pa. J5 ....3.65
Bessemer,Ala. T2 ....3.65
Bethlehem,Pa. B2 ....3.70
Clairton,Pa. C3 ....3.65
Fairfield,Ala. T2 ....3.65
Fontana,Calif. K1 ....*4.25*
Gary,Ind. C3 ....3.65
Geneva,Utah G1 ....3.65
Houston,Tex. S5 ....*4.05*
Ind.Harbor,Ind. I-2 ....*3.65*
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....*4.25*
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.25
Minnequa,Colo. C10 ....*4.10*
Munhall,Pa. C3 ....3.65
Niles,Calif.(22) P1 ....4.02
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 ....4.50
Seattle B3 ....4.30
So.Chicago,Ill. C3, W14.3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90

Alloy Stand. Shapes
Clairton,Pa. C3 ....4.35
Fontana,Calif. K1 ....5.25
Munhall,Pa. C3 ....4.35
So.Chicago,Ill. C3 ....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ....5.50
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. C3 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....*6.05*
Gary,Ind. C3 ....5.50
Geneva,Utah G1 ....*5.50*
Ind.Harbor,Ind. I-2 ....*5.50*
Ind.Harbor,Ind. Y1 ....*6.00*
Johnstown,Pa. B2 ....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 ....5.75
Munhall,Pa. C3 ....5.50
So.Chicago,Ill. C3 ....5.50
So.SanFrancisco B3 ....5.70
Struthers,O. Y1 ....*6.00*

Wide Flange
Bethlehem,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. C3 ....3.65
So.Chicago,Ill. C3 ....3.65

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. C3 ....5.45
So.Chicago,Ill. C3 ....5.45

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....*4.45*
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. C3 ....4.45
So.Chicago,Ill. C3 ....4.45

BEARING PILES
Munhall,Pa. C3 ....3.65
So.Chicago,Ill. C3 ....3.65

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.65
Bessemer,Ala. T2 ....5.65
Clairton,Pa. C3 ....5.65
Cleveland J5, R2 ....5.65
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 ....5.85
Fairfield,Ala. T2 ....5.65
Fontana,Calif. K1 ....*6.25*
Gary,Ind. C3 ....5.65
Geneva,Utah G1 ....5.65
Ind.Harbor,Ind. I-2 ....*5.65*
Ind.Harbor,Ind. Y1 ....*6.15*
Johnstown,Pa. B2 ....5.65
Munhall,Pa. C3 ....5.65
Pittsburgh J5 ....5.65
Sharon,Pa. S3 ....5.70
So.Chicago,Ill. C3 ....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 ....5.65
Youngstown Y1 ....*6.15*

PLATES, Open-Hearth Alloy
Coatesville,Pa. L7 ....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 ....5.40
Gary,Ind. C3 ....4.75
Johnstown,Pa. B2 ....4.75
Munhall,Pa. C3 ....4.75
Sharon,Pa. S3 ....5.20
So.Chicago,Ill. C3 ....4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 ....4.75
Conshohocken,Pa. A3 ..4.75
Harrisburg,Pa. C5 ....5.95
Ind.Harbor,Ind. I-2 ....*4.75*
Munhall,Pa. C3 ....4.75
So.Chicago,Ill. C3 ....4.75

PLATES (Universal Mill)
Fontana,Calif. K1 ....*4.60*

PLATES, Carbon A.R.
Fontana,Calif. K1 ....*5.45*

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ....3.70
Ashland,Ky.(15) A10 ..3.70
Bessemer,Ala. T2 ....3.70
Clairton,Pa. C3 ....3.70
Claymont,Del. W16 ....4.15
Cleveland J5, R2 ....3.70
Coatesville,Pa. L7 ....4.15
Conshohocken,Pa. A3 ..4.15
Ecorse,Mich. G5 ....3.75
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....*4.30*
Gary,Ind. C3 ....3.70
GraniteCity,Ill. G4 ....4.40
Geneva,Utah G1 ....3.70
Harrisburg,Pa. C5 ....4.95
Houston,Tex. S5 ....*4.10*
Ind.Harbor,Ind. I-2, Y1 ..*3.70*
Johnstown,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....*4.50*
Munhall,Pa. C3 ....3.70
Pittsburgh J5 ....3.70
Seattle B3 ....4.60
Sharon,Pa. S3 ....3.95
So.Chicago,Ill. C3, W14.3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 ....3.70
Weirton,W.Va. W6 ....4.00
Youngstown C3, R2, Y1.3.70

PLATES, Wrought Iron
Economy,Pa. B14 ....8.60

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ..3.95
Ashland,lcl.(15) A10 ....4.45
Cleveland,c.l. R2 ....*4.30*
Warren,O.cl. R2 ....*4.30*

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ....3.70
Alton,Ill.(1) L1 ....3.45
Atlanta,Ga. A11 ....*4.25*
Bessemer,Ala. T2 ....3.70
Buffalo R2 ....3.70
Canton,O. R2 ....3.70
Clairton,Pa. C3 ....3.70
Cleveland R2 ....3.70
Detroit R7 ....3.85
Ecorse,Mich. G5 ....3.65
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....*4.35*
Gary,Ind. C3 ....3.70
Houston,Tex. S5 ....*4.10*
Ind.Harbor,Ind. I-2, Y1 ..*3.70*
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....*4.30*
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.40
Milton,Pa. B6 ....3.70
Minnequa,Colo. C10 ....*4.15*
Niles,Calif. P1 ....4.17
N.Tonawanda,N.Y. B11.3.45
Pittsburg,Calif. C11 ...4.40
Pittsburgh J5 ....3.70
Portland,Oreg. O4 ....4.65
Seattle B3, N14 ....4.45
So.Chicago C3, R2, W14.3.70
So.Duquesne,Pa. C3 ...3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 ....*3.70*
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 ....3.85
Youngstown C3, R2 ....3.70

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 ....3.70
Atlanta A11 ....*4.25*
Johnstown,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 ....4.17
Portland,Oreg. O4 ....4.65
SanFrancisco S7 ....4.00

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.30
Buffalo R2 ....4.30
Canton,O. R2 ....4.30
Canton,O.(29) T7 ....3.95
Clairton,Pa. C3 ....4.30
Detroit R7 ....4.45
Ecorse,Mich. G5 ....4.25
Fontana,Calif. K1 ....*5.30*
Gary,Ind. C3 ....4.30
Houston,Tex. S5 ....*4.70*
Ind.Harbor,Ind. I-2, Y1 ..*4.30*
Johnstown,Pa. B2 ....4.30
KansasCity,Mo. S5 ....*4.90*
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 ....5.35
Massillon,O. R2 ....4.30
Midland,Pa. C18 ....4.30
So.Chicago C3, R2, W14.4.30
So.Duquesne,Pa. C3 ....4.30
Struthers,O. Y1 ....*4.30*
Warren,O. C17 ....4.20
Youngstown C3 ....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 ....4.55
Fontana,Calif. K1 ....*5.30*
Gary,Ind. C3 ....4.55
Youngstown C3 ....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.55
Atlanta A11 ....5.35
Bessemer,Ala. T2 ....5.55
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. C3 ....5.55
Cleveland R2 ....5.55
Ecorse,Mich. G5 ....5.65
Fairfield,Ala. T2 ....5.55
Fontana,Calif. K1 ....*6.60*
Gary,Ind. C3 ....5.55
Ind.Harbor,Ind. I-2 ....*5.55*
IndianaHarbor,Ind. Y1 ...*6.05*
Johnstown,Pa. B2 ....5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....5.90
Pittsburgh J5 ....5.55
So.Duquesne,Pa. C3 ....5.55
So.SanFrancisco B3 ....5.95
Struthers,O. Y1 ....*6.05*
Youngstown C3 ....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.55
BeaverFalls,Pa.M12,R2 ..4.55
Buffalo B5 ....*4.60*
Camden,N.J. P13 ....5.00
Carnegie,Pa. C12 ....4.55
Chicago W18 ....4.55
Cleveland A7 ....*4.55*
Cleveland C20 ....4.55
Detroit P17 ....4.70
Donora,Pa. A7 ....*4.55*
Ecorse,Mich. G5 ....4.35
Elyria,O. W8 ....4.55
FranklinPark,Ill. N5 ....4.55
Gary,Ind. R2 ....4.55
GreenBay,Wis. F7 ....*4.55*
Hammond,Ind. L2, M13.4.55
Hartford,Conn. R2 ....5.10
Harvey,Ill. B5 ....*4.55*
LosAngeles R2 ....6.00
Mansfield,Mass. B5 ....*5.10*
Massillon,O. R8 ....*4.55*
Midland,Pa. C18 ....4.55
Monaca,Pa. S17 ....4.55
Newark,N.J. W18 ....5.00
Plymouth,Mich. P5 ....4.80
Pittsburgh J5 ....4.55
Putnam,Conn. W18 ....5.10
Readville,Mass. C14 ....*5.10*
St.Louis,Mo. M5 ....*4.95*
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ..5.00
Struthers,O. Y1 ....*4.55*
Waukegan,Ill. A7 ....*4.55*
Youngstown F3, Y1 ....*4.55*

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 ....5.40
Buffalo B5 ....5.40
Camden,N.J. P13 ....5.80
Canton,O. R2 ....5.40
Canton,O.(29) T7 ....4.90
Carnegie,Pa. C12 ....5.40
Chicago W18 ....5.40
Cleveland A7 ....*5.45*
Cleveland C20 ....5.40
Detroit P17 ....5.55
Donora,Pa. A7 ....*5.45*
Elyria,O. W8 ....5.40
Gary,Ind. R2 ....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 ....5.85
Harvey,Ill. B5 ....*5.40*
Lackawanna,N.Y. B2 ..5.40
Mansfield,Mass. B5 ....*5.85*
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 ....5.40
Monaca,Pa. S17 ....5.40
Newark,N.J. W18 ....5.75
Plymouth,Mich. P5 ....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 ....*5.40*
Warren,O. C17 ....4.90
Waukegan,Ill. A7 ....*5.45*
Worcester,Mass. A7 ....*5.75*
Youngstown F3, Y1 ....*5.40*

RAIL STEEL BARS
ChicagoHts.(3,4)I-2, C2.4.75
Dallas,Tex.(4) S20 ....6.00
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4.4.63
Huntngtn,W.Va.(3) W7 ..5.50
Marion,O.(3) P11 ....*4.75*
Moline,Ill.(3) R2 ....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(S.R.) L5 ....9.60

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) L1 ....3.45
Atlanta A11 ....*4.25*
Buffalo R2 ....3.70
Cleveland R2 ....3.70
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....*4.35*
Gary,Ind. C3 ....3.70
Houston,Tex. S5 ....*4.10*
Ind.Harbor,Ind. I-2, Y1 ..*3.70*
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....*4.30*
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.40
Milton,Pa. B6 ....3.70
Minnequa,Colo. C10 ....*4.50*
Niles,Calif. P1 ....4.17
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 ....3.70
Portland,Oreg. O4 ....4.95
SandSprings,Okla. S5 ....*4.60*
Seattle B3, N14 ....4.45
So.Chicago,Ill. R2 ....3.70
So.Duquesne,Pa. C3 ....3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 ....*3.70*
Torrance,Calif. C11 ....4.40
Youngstown C3, R2 ....3.70

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...4.75
LosAngeles B3 ....5.45
Marion,O. P11 ....5.00
Seattle B3, N14 ....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt., ¼-1" B2..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ....3.60
Butler,Pa. A10 ....3.60
Cleveland J5 ....*3.60*
Cleveland R2 ....3.60
Conshohocken,Pa. A3 ....4.00
Detroit M1 ....4.40
Dover,O. R1 ....5.65
Ecorse,Mich.(8) G5 ....*3.80*
Fairfield,Ala. T2 ....3.60
Fontana,Calif. K1 ....*4.50*
Gary,Ind. C3 ....3.60
GraniteCity,Ill. G4 ....4.30
Geneva,Utah G1 ....3.70
Ind.Harbor,Ind. I-2, Y1 ..*3.60*
Irvin,Pa. C3 ....3.60
Lackawanna,N.Y. B2 ..3.60
Munhall,Pa. C3 ....3.60
Niles,O. N12 ....*5.25*
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 ....3.60
Sharon,Pa. S3 ....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 ....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4..3.75
Youngstown C3, Y1 ...3.60

SHEETS, HOT-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 ..4.75
Ind.Harbor,Ind. I-2 ....*5.40*
Mansfield,O. E6 ....4.15
Niles,O. N12 ....*5.75*
Torrance,Calif. C11 ....5.40

SHEETS, H-R (14-ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich. G5 ....5.50
Fairfield,Ala. T2 ....5.40
Fontana,Calif. K1 ....*6.35*
Gary,Ind. C3 ....5.40
Ind.Harbor,Ind. I-2 ....*5.40*
IndianaHarbor,Ind. Y1 ...*5.90*
Irvin,Pa. C3 ....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 ....5.40
Sharon,Pa. S3 ....5.40
So.Chicago,Ill. C3 ....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 ....5.40
Weirton,W.Va. W6 ....5.75
Youngstown C3 ....5.40
Youngstown Y1 ....*5.90*

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.55
Ecorse,Mich. G5 ....6.65
Fontana,Calif. K1 ....*7.40*
Gary,Ind. C3 ....6.55
IndianaHarbor,Ind. Y1 ...*7.05*
IndianaHarbor,Ind. Y1..6.45
Irvin,Pa. C3 ....6.55
Lackawanna(37) B2....6.55
Pittsburgh J5 ....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 ....6.55
Weirton,W.Va. W6 ....6.90
Youngstown Y1 ....*7.05*

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	*4.55*
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	*5.25*
Gary,Ind. C3	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	*4.35*
Irvin,Pa. C3	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	*4.35*

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala., R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. C3	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	*4.80*
Irvin,Pa. C3	4.80
Kokomo,Ind.(13) C16	*5.20*
MartinsFerry,O. W10	4.80
Niles,O. N12	*6.00*
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	*7.20*
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. C3	*5.35*
Kokomo,Ind.(13) C16	*5.75*
Niles,O. N12	*6.55*

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	*5.65*
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	*5.70*

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. C3	*5.20*
Mansfield,O. E6	4.80
Middletown,O. A10	5.20
Niles,O. N12	*6.00*
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	6.35

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	*6.80*
Follansbee,W.Va.(23)F4	*6.85*

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland A10	5.60	...
Canton,O. R2	*5.65*	*6.10*
Fairfield,Ala. T2	5.60	5.85
Gary C3	5.60	5.85
IndianaHarbor I-2	*5.60*	*5.85*
Irvin,Pa. C3	5.60	5.85
Kokomo C16	*6.25*	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	*5.60*

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.85
Cleveland R2	*4.20*
Ind. Harbor,Ind. I-2	*3.85*
Warren,O. R2	*4.20*

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	*4.95*
Middletown,O. A10	4.85
Warren,O. R2	*4.95*

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	*5.55*

SHEETS, ZINKGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, Drum Body

Pittsburg,Calif. C11	*4.30*
Torrance,Calif. C11	*4.30*

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

SHEETS, Well Casing

Fontana,Calif. K1	4.80
TorranceCalif. C11	5.10

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)

	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	*6.45*	*6.75*	*(34)*	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	*6.75*	*7.25*	...	...
Vandergrift,Pa. C3	...	*7.25*	*7.75*	*9.00*	*9.80*
Warren,O. R2	*6.95*	*7.25*	*7.75*	*9.00*	*9.80*
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. C3	*10.35*	*10.90*	*11.60*	*12.40*
Warren,O. R2	*10.35*	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	*12.90*	*13.75*	*14.75*	*15.25*

TIN PLATE, American COKE (Base Box)

	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Har. I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	*5.85*
Gary,Ind. C3	*5.85*
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	*5.85*
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	*6.15*

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	*4.65*
Ecorse,Mich. G5	4.70
Gary,Ind. C3	*4.65*
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	*4.65*
Irvin,Pa. C3	*4.65*
Middletown,O. A10	4.65
Youngstown Y1	*4.65*

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	*5.30*
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.40
Fairfield,Ala. T2	*5.30*
Fontana,Cal. K1	5.90
Gary,Ind. C3	*5.30*
Ind.Harb.,Ind. I-2	*5.30*
IndianaHarbor,Ind. Y1	*5.80*
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	*5.30*
Weirton,W.Va. W6	5.75
Youngstown Y1	5.20
Youngstown Y1	*5.80*

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.50
Houston,Tex. S5	*5.90*
KansasCity,Mo. S5	*6.10*
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S3	5.85
Youngstown C3	5.50

STRIP, Hot-Rolled Ingot Iron

Warren,O. R2	*4.10*
Ashland,Ky.(8) A10	3.75

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.50
Atlanta A11	*4.05*
Bessemer, Ala. T2	3.50
Bridgprt,Conn.(10) S15	*4.00*
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	*4.65*
Gary,Ind. C3	3.50
Houston,Tex. S5	*4.90*
Ind.Harbor,Ind. I-2, Y1	*3.50*
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	*4.10*
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Millton,Pa. B6	3.50
Minnequa,Colo. C10	*4.55*
NewBritain(10) S15	*4.00*
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	*4.25*
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.00
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	*4.25*
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown C3, Y1	3.50

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15	10.10
Carnegie,Pa. S18	10.60
Cleveland A7	*10.00*
Dover,O. G6	*10.50*
Fontana,Calif. K1	11.15
Harrison,N.J. C18	10.00
NewBritn.Conn.(10)S15	10.10
Pawtucket,R.I.(11) N8	*10.75*
Pawtucket,R.I.(12) N8	*11.05*
Sharon,Pa. S3	10.60
Worcester,Mass. A7	*10.30*

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	*5.25*

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	*5.35*	*6.80*	*7.40*	*9.35*	*11.65*
Bristol,Conn. W1	...	...	*7.70*	*9.65*	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	*4.65*	*6.45*	*7.40*	*9.35*	*11.65*
Detroit D2	*5.60*	*6.65*	*7.25*	...	...
Dover,O. G6	*5.50*	*6.80*	*7.40*	*9.35*	*11.65*
FranklinPark,Ill. T6	4.50	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	7.20	9.15	11.45
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	*5.35*	*6.80*	*7.40*	*9.35*	*11.65*
NewCastle,Pa. B4	*5.35*	*6.80*	*7.40*	*9.35*	....
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	*5.85*	*6.75*	*7.35*	...	....
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	...	*6.80*	*7.40*	*9.35*	*11.65*
Worcester,Base	*5.85*	*7.10*	*7.70*	*9.65*	*11.95*
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J., R5	...	*7.10*	*7.70*	*9.65*	*11.95*
Wallingford,Conn. W2	*5.85*	*6.75*	*7.35*	*9.30*	*11.60*
Weirton,W.Va. W6	*5.35*	*6.80*	*7.40*	*9.35*	*11.65*
Worcester,Mass. A7	*4.95*	*6.75*	*7.70*	*9.65*	*11.95*
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	*10.30*	*12.50*	*15.35*
Harrison,N.J. C18	...	...	10.05	12.00	14.60

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	*5.50*
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	*5.35*
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.10
Detroit D2	*5.60*
Detroit M1	5.45
Dover,O.(40) G6	*5.50*
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	*6.25*
FranklinPark,Ill. T6	4.50
Ind.Harbor,Ind. I-2	*4.90*
Lackawanna,N.Y. B2	4.65
LosAngeles C1	*6.40*
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.65
NewBritain(10) S15	4.85
NewBritain(10) S15	*5.35*
NewCastle,Pa. B4	*5.35*
NewHaven,Conn. D2	*5.85*
NewHaven,Conn. A7	5.15
NewYork W3	5.00
Pawtucket,R.I. R3	*5.75*
Pawtucket,R.I.(21) N8	*5.85*
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	4.15
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	*6.00*
Wallingford,Conn. W2	*5.85*
Warren,O.(40) T5	*5.25*
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
WestLeechburg,Pa. A4	4.65
Youngstown C8, (40)	4.50
Youngstown Y1	*4.65*

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.70
Dover,O. G6	*7.30*
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	*6.55*
Weirton,W.Va. W6	7.20
Youngstown Y1	*7.05*

STRIP, Electro Galvanized

Cleveland A7	4.65
Dover,O. G6	5.00
Warren,O. T5	*5.25*
Weirton,W.Va. W6	4.65

Key to Producing Companies

A1	Acme Steel Co.	C10	Colorado Fuel & Iron
A3	Alan Wood Steel Co.	C12	Columbia Steel & Shaft.
A4	Allegheny Ludlum Steel	C13	Columbia Tool Steel Co.
A7	American Steel & Wire	C14	Compressed Steel Shaft
A8	Anchor Drawn Steel Co.	C16	Continental Steel Corp.
A9	Angell Nail & Chaplet	C17	Copperweld Steel Co.
A10	Armco Steel Corp.	C18	Crucible Steel Co.
A11	Atlantic Steel Co.	C19	Cumberland Steel Co.
A13	American Cladmetals Co.	C20	Cuyahoga Steel & Wire
B1	Babcock & Wilcox Tube	D2	Detroit Steel Corp.
B2	Bethlehem Steel Co.	D3	Detroit Tube & Steel
B3	Beth. Pac. Coast Steel	D4	Disston & Sons, Henry
B4	Blair Strip Steel Co.	D6	Driver Harris Co.
B5	Bliss & Laughlin Inc.	D7	Dickson Weatherproof Nail Co.
B6	Bolardi Steel Corp.	E1	Eastern Gas&Fuel Assoc.
B8	Braeburn Alloy Steel	E2	Eastern Stainless Steel
B11	Buffalo Bolt Co.	E4	Electro Metallurgical Co.
B12	Buffalo Steel Co.	E5	Elliott Bros. Steel Co.
B14	A. M. Byers Co.	E6	Empire Steel Corp.
C1	Calif. Cold Rolled Steel	F2	Firth Sterling Steel
C2	Calumet Steel Div., Borg-Warner Corp.	F3	Fitzsimons Steel Co.
C3	Carnegie-Illinois Steel	F4	Follansbee Steel Corp.
C4	Carpenter Steel Co.	F5	Franklin Steel Div., Borg-Warner Corp.
C5	Central Iron & Steel Div. Barium Steel Corp.	F6	Fretz-Moon Tube Co.
C7	Cleve.Cold.Roll.Mills Co.	F7	Ft. Howard Steel & Wire
C8	Cold Metal Products Co.	G1	Geneva Steel Co.
C9	Colonial Steel Co.	G2	Globe Iron Co.
		G3	Globe Steel Tubes Co.
		G4	Granite City Steel Co.
		G5	Great Lakes Steel Corp.
		G6	Greer Steel Co.
		H1	Hanna Furnace Corp.
		H4	Heppenstall Co.
		I-1	Igoe Bros. Inc.
		I-2	Inland Steel Co.
		I-3	Interlake Iron Corp.
		I-4	Ingersoll Steel Div., Borg-Warner Corp.
		J1	Jackson Iron & Steel Co.
		J3	Jessop Steel Co.
		J4	Johnson Steel & Wire Co.
		J5	Jones & Laughlin Steel
		J6	Joslyn Mfg. & Supply
		J7	Judson Steel Corp.
		J8	Jersey Shore Steel Co.
		K1	Kaiser Steel Corp.
		K2	Keokuk Electro-Metals
		K3	Keystone Drawn Steel
		K4	Keystone Steel & Wire
		L1	Laclede Steel Co.
		L2	LaSalle Steel Co.
		L3	Latrobe Electric Steel
		L5	Lockhart Iron & Steel
		L6	Lone Star Steel Co.
		L7	Lukens Steel Co.
		C11	Columbia Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.80
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown C3	*3.75*

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	6.25
Buffalo W12	5.90
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth A7	6.25
Fostoria,O. S1	6.20
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Millbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	6.25
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	*6.55*
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	*6.25*
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Williamsport,Pa. B2	(41)
Worcester A7, J4	6.55
Woretr,Mass.N6,T6,W12	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	*6.20*
Buffalo W12	5.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	*6.20*
Detroit D2	*6.20*
Dover,O. G6	*6.20*
Fostoria,O. S1	6.00
Kokomo,Ind. C16	*5.70*
FranklinPark,Ill. T6	5.70
Massillon, O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	*6.50*
Pawtucket,R.I.(12) N8	*6.85*
Trenton,N.J. R5	*6.15*
Worcester,T6, W12	5.65
Worcester A7	6.00

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.45
Chicago W13	*8.90*
Cleveland A7	8.90
Crawfordsville,Ind. M8	*8.95*
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	*8.90*
Monessen,Pa. P16	8.90
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.90
Roebling,N.J. R5	*9.20*
Waukegan,Ill. A7	8.90
Worcester,Mass. T6	8.75
Worcester,Mass. A7	9.20

WIRE, Tire Bead

Bartonville,Ill.(1) K4	*10.90*
Monessen,Pa. P16	*11.40*
Roebling,N.J. R5	*11.55*

WIRE, Manufacturers Bright,

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	4.85
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.50
Chicago W13	*4.85*
Cleveland A7	4.85
Cleveland C20	4.55
Crawfordsville,Ind. M8	*5.10*
Donora,Pa. A7	4.85
Duluth A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.00
Houston S5	*5.25*
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	*5.45*
Kokomo,Ind. C16	*4.95*
LosAngeles B3	5.80
Minnequa,Colo. C10	*5.10*
Monessen,Pa. P7	5.10
Newark, 6-8ga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	*5.80*
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	*4.85*
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7	*5.15*
Worcester,Mass. T6	5.15

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	*5.90*
Donora,Pa. A7	*5.90*
Duluth A7	*5.90*
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	*6.20*
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	*6.85*
Portsmouth,O. P12	5.90
Roebling,N.J. R5	*6.20*
So.Chicago,Ill. R2	*5.90*
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	6.85
Trenton,N.J. A7	*6.20*
Waukegan,Ill. A7	*5.90*
Worcester,Mass. A7	*6.20*

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.55	8.55	8.80
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.55	8.55	8.80
Donora,Pa. A7	8.55	8.55	8.80
Fostoria,O. S1	8.35	8.35	8.60
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P16	8.55	8.55	8.80
Monessen,Pa. P7	8.80	8.80	9.05
NewHaven,Conn. A7	8.85	8.85	9.10
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.55	8.55	8.80
Roebling,N.J. R5	*8.85*	*8.85*	*9.10*
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	*8.55*	*8.55*	*8.80*
Trenton,N.J. A7	8.85	8.85	9.10
Waukegan,Ill. A7	8.55	8.55	8.80
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.70	5.95
Bartonville(19)K4	5.95	6.15
Buffalo(31) W12	4.50	...
Cleveland A7	5.70	6.15
Crawfordsville M8	*5.95*	*6.40*
Donora A7	5.70	6.15
Duluth A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	*6.10*	*6.55*
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	*6.30*	*6.75*
Kokomo C16	*5.80*	*6.05*
LosAngeles B3	6.30	...
Minnequa C10	*5.95*	*6.45*
Monessen P7	5.95	6.40
Palmer(31) W12	4.80	...
Pitts.Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	*5.70*	*5.95*
So.S.Fran. C10	*6.65*	*7.10*
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	*5.70*	*6.15*
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	10.15	11.85
Bartonville(1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfordsville M8	*10.30*	*12.00*
Fostoria,O. S1	10.40	12.40
Johnstown B2	10.15	12.05
Kokomo C16	9.80	11.30
Minnequa C10	*10.40*	*12.40*
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	*10.25*	*12.15*
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.25	12.15
Waukegan A7	10.25	12.15

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	136
Aliquippa,Pa. J5	140
Atlanta A11	133
Bartonville,Ill.(19) K4	143
Crawfordsville M8	*145*
Donora,Pa. A7	140
Duluth,Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	*148*
Johnstown,Pa. B2	140
Joliet,Ill. A7	140
KansasCity,Mo. S5	*152*
Kokomo,Ind. C16	*142*
Minnequa,Colo. C10	*146*
Monessen,Pa. P7	145
Pittsburg,Calif. C11	160
Portsmouth,O.(18) P12	147
Rankin,Pa. A7	140
So.Chicago,Ill. R2	136
So.SanFran.,Calif. C10	*160*
SparrowsPoint,Md. B2	142
Sterling,Ill.(1) N15	140

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	*130*
Johnstown,Pa. B2	125
Joliet,Ill. A7	125
Marion,O. P11	*140*
Minnequa,Colo. C10	*130*
Moline,Ill. R2	*136*
So.Chicago R2	*140*
Tonawanda B12	140
Williamsport,Pa. S19	150

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	126
Ala.City,Ala.,17-18ga.R2	*213*
Aliquippa,Pa.9-14½ga. J5	130
Atlanta A11	123
Bartonville,Ill.(19) K4	130
Crawfordsville,Ind. M8	*132*
Donora,Pa. A7	130
Duluth A7	130
Houston,Tex. S5	*138*
Fairfield,Ala. T2	130
Johnstown,Pa. B2	130
Johnstown,17ga..6" B2	204
Johnstown,17ga..4" B2	207
Joliet,Ill. A7	130
KansasCity,Mo. S5	*142*
Kokomo,Ind. C16	*132*
Minnequa,Colo. C10	*138*
Monessen,Pa. P7	135
Pittsburg,Calif. C11	153
Portsmouth,O.(18) P12	137
Rankin,Pa. A7	130
So.Chicago,Ill. R2	126
Sterling,Ill.(1) N15	130

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	123
Atlanta A11	119
Bartonville,Ill.(19) K4	123
Chicago W13	*123*
Crawfordsville M8	*132*
Donora,Pa. A7	123
Duluth A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	*135*
Kokomo,Ind. C16	*125*
Minnequa,Colo. C10	*128*
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	*147*
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

AXLES

Ind.Harbor,Ind. S13	*5.60*
Johnstown,Pa. B2	5.60

JOINT BARS

Bessemer,Pa. C3	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	*4.70*
Joliet,Ill. C3	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	*4.70*
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	*6.15*
KansasCity,Mo. S5	*6.40*
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	*6.15*
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	*6.15*
Youngstown R2	6.15

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. C3	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	*5.00*
Ind.Harbor,Ind. I-2	*3.60*	*3.50*	*3.55*	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	*3.60*	*3.50*	...	*4.50*
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

NAILS & STAPLES, Stock to dealers & mfrs. (7) Col.

AlabamaCity,Ala. R2	118
Aliquippa,Pa. J5	118
Atlanta A11	113
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	*130*
Cleveland A9	111
Crawfordsville,Ind. M8	*122*
Donora,Pa. A7	118
Duluth A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	*126*
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	*130*
Kokomo,Ind. C16	*120*
Minnequa,Colo. C10	*123*
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	*6.10*
Bartonville,Ill.(19) K4	5.95
Crawfordsville,Ind. M8	*6.30*
Donora,Pa. A7	5.95
Duluth A7	5.95
Johnstown,Pa. B2	5.95
Joliet,Ill. A7	5.95
Kokomo,Ind. C16	*6.05*
Minnequa,Colo. C10	*6.20*
Pittsburg,Calif. C11	6.90
Portsmouth,O. P12	6.25
Rankin,Pa. A7	5.95
So.Chicago,Ill. R2	*6.10*
SparrowsPoint,Md. B2	6.05
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	6.25

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.15

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. C3	4.50
Ind.Harbor,Ind. I-2	*4.50*
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	*4.50*
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	*9.85*
Lebanon,Pa.(32) B2	9.85
Minnequa,Colo. C10	*9.85*
Pittsburgh O3, P14	*9.85*
Seattle B3	10.10

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield,S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Corp.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	18W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	204.00
Spec. Carbon	32.50	19W,4Cr,2V,7Co	204.00
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	172.00
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	110.00	6.4W,4.5Cr,1.9V,5Mo	84.00
18W,4Cr,2V	124.50	6W,4Cr,3V,6Mo	106.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3.

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb. and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c for finer than 15 gage.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (⅜" bar elec. furn. billet, 5.03c); to consumers, 5.28c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase, f.o.b. mill.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	29.0	1.5	+0.5	0.5
¼	6.0	0.42	28.5	26.5	26.0	+1.0	+3.0	0.5
⅜	6.0	0.57	23.5	21.5	21.5	+7.0	+9.0	4.0
½	8.5	0.85	36.0	34.0	35.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	38.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	40.5	21.5	19.5	20.5
1¼	23.0	2.28	42.0	44.0	41.0	22.0	24.0	21.0
1½	27.5	2.78	42.5	41.5	41.5	23.0	21.5	22.0
2	37	3.68	43.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.62	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10. Following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5, Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1; Alton, Ill. (Lorain base) L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 3½% on ⅛", plus 2½% on ¼", plus 9% on ⅜". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 16½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½ points lower on 1¼", 2 points lower on 1½" and 2", 1½ points lower on 2½" and 3"; Etna, Pa. N2 and 18½% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	$1.09	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.68	17.05	14.19	16.54
1½	13	16.17	19.02	15.63	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.90	23.51
2¼	13	22.96	27.06	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2¾	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.58	28.48	33.49
3	12	30.82	36.27	29.90	35.18

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302	....	....	....	19.75	24.00	77.00
304	25.00	28.00–29.50	....	20.75–23.50	24.00–25.50	77.00
309	30.50	35.00	....	....	....	....
310	36.50	41.00	....	....	....	144.00
316	29.50	31.50–34.00	....	26.00	33.00–34.50	....
317	34.50	39.00	....	....	....	....
318	33.50	38.00	....	....	....	....
321	26.50	31.00	....	23.00	....	111.00
347	27.50	30.50–32.00	....	24.00	30.00–31.50	130.00
405	21.25	27.75	....	....	....	....
410	20.75	27.25	....	....	....	....
Nickel	31.00	41.00	33.50	45.00	....	....
Inconel	39.00	51.00	....	....	....	165.00
Monel	32.00	42.00	....	....	....	....
Copper*	....	....	21.70†	27.65‡	....	....

* Deoxidized. † 18.20c for hot-rolled. ‡ 24.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ⅝-in. 18.5
- ¾-in. and larger..... 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 26
Blank 34
Plow 34
Step, Elevator, Tap, and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up bolts 31

NUTS

	Reg.	Heavy
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in.	12	6.5
¾-in.-1½-in.	9	1
1⅝ in. & larger	7.5	1
H.R. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in.	16.5	6.5
¾-in.-1½-in.	12	2
1⅝ in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in.	23	17.5
¾-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS
American Standard
(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.
½-in. & smaller	35	28.5
⅝-in. & ⅝-in.	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
Light ⅞-in. & smaller	35	
½-in. to ⅝-in.	28.5	
¾-in. to 1½-in.	26	

STEEL STOVE BOLTS
F.o.b. plant; per cent off list in packages)
Plain finish .....56 & 10
Plated finishes ....41 & 10

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)
6 in. or shorter:
- ⅝-in. & smaller 47
- ¾-in. through 1 in. ... 40

Longer than 6 in.:
- ⅝-in. & smaller 33
- ¾-in. through 1 in. ... 18

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)
1 in. diam. x 6 in. and shorter 44
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS
(Packaged; per cent off list)
No. 10 and smaller 41
¼-in. diam. & larger .. 24
N.F. thread, all diams... 18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.00
8 to 16	48,60,72	17.00
7	48,60	18.64
6	48,60	19.95
4,5⅛	40	20.48
3	40	21.53
2½	24,30	22.05
2	24,30	24.15

CARBON

40	100,110	7.65
35	100,110	7.65
30	84,110	7.65
24	72 to 104	7.65
17 to 20	34,90	7.65
14	60,72	8.16
10,12	60	8.42

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.00	36.50	31.25
303...	43.00	40.00	33.75
304...	43.00	38.50	32.75
309...	55.50	54.50	44.25
316...	56.50	58.50	48.75
321...	49.00	48.00	36.75
347...	53.50	52.00	41.25
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 61.50c, strip 63.00c, W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-32.00
Toluol, one deg...21.00-28.00
Industrial xylol ..21.00-29.50
Per ton bulk, ovens
Sulphate of ammonia..$32-45
Cents per pound, ovens
Phenol, 40 (carlots, non returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $41; less than 60%, $38.
Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge Iron Cents
- 98+% Fe, carlots.. 16.00
- Swedish, o.b. New York, in bags...7.40-8.50

Electrolytic Iron:
- Annealed, 99.5% Fe 39.50
- Unannealed, 99+% Fe 33.50
- Unannealed 99+% Fe (minus 325 mesh) 48.50

Powder Flakes 44.50
Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns..70.00-135.00

Aluminum:
- Carlots, freight allowed 27.50
- Atomized, 500 lb drums, freight allowed 33.50

Brass, 10-ton lots 30.00-33.25
Copper:
- Electrolytic 36.75
- Reduced 33.75-37.00

Lead 23.00
Manganese:
- Minus 100-mesh ... 52.00
- Minus 35 mesh ... 48.00
- Minus 200 mesh ... 56.00

Nickel unannealed .. 75.50
Nickel-Silver, 10-ton lots 43.25
Silicon 34.00
Solder (plus cost of metal) 8.50
Stainless Steel, 302 .. 75.00
Tin $1.575
Zinc, 10-ton lots..23.00-30.50
Tungsten: Dollars
- 99%, minus 80 to 200 mesh, freight allowed:
  - over 1000 lb 2.80
  - 1000 lb 2.95
  - less than 1000 lb. 3.00
- 98.8% minus 65 mesh, freight allowed:
  - 1000 lb and over.. 3.65
  - less than 1000 lb.. 3.75

Molybdenum:
- 99%, minus 80 to 200 mesh, over 500 lb 2.25
- 200 to 500 lb 2.60
- less than 200 lb .. 2.75
- 82-88%, freight allowed, 2000 lb and over .. 2.40
- less than 2000 lb.. 2.45

Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.,fur. ..$14.50-15.00
Connellsvll.,fdry. ..16.50-17.00
New River, foundry ...19.50
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens.$22.75
Everett, Mass., ovens
- New England, del...24.30

Chicago, ovens 21.00
- Chicago del. 22.45
- Detroit, del. 24.91

Terre Haute, ovens....22.50
Milwaukee, ovens 23.00
Indianapolis, ovens 22.00
- Chicago, del. 25.87
- Cincinnati, del. 24.92
- Detroit, del. 25.90

Ironton, O., ovens 21.50
- Cincinnati, del. 24.06

Painesville, O., ovens..23.25
- Buffalo, del. 25.37
- Cleveland, del. 24.97

Erie, Pa., ovens 22.50
Birmingham, ovens 20.30
- *Birmingham, del. 21.35*

Philadelphia, ovens ...22.10
Neville Island, Pa., ovens. 23.00
Swedeland, Pa., ovens.22.00
St. Louis, ovens 22.99
- St. Louis, del. 24.12

Portsmouth, O., ovens.21.50
- Cincinnati, del. 24.06

Detroit, ovens 23.00
- Detroit, del. *24.00
- Buffalo, del. 26.04
- Flint, del. 25.44
- Pontiac, del. 24.39
- Saginaw, del. 25.75

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York(city)	6.27	7.29	8.44	6.59	...	6.42	7.29	9.25	6.40	6.58	8.04
New York(c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city) ..	6.40	7.20	8.49	6.35	...	6.25	7.04	9.25	6.40	6.98	7.88
Boston (c'try) .	6.20	7.00	8.29	6.15	...	6.05	6.84	9.05	6.20	6.78	7.68
Phila. (city) ..	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try) ..	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city) ...	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try) ..	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va. ..	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va..	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.05	7.80
Wash. (w'hse) .	5.56-6.02	6.80-7.26	6.73-8.49	6.00-6.46	...	6.00-6.46	6.62-7.26	...	6.10-6.56	5.81-6.22	7.45-7.86
Buffalo (del.) ..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[3]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[3]	5.35	5.65	6.95
Pitts. (w'hse) .	5.60	6.40[3]	7.75	5.65-5.95	6.90	5.55	6.40	10.10††	5.70	5.75	7.00
Detroit (w'hse).	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve (w'hse).	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city) ..	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
Chicago (city) .	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
Milwaukee (del.)	5.94	6.74	8.09	5.89	...	5.89	6.74	10.44	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	...	5.69	6.54	10.24	5.84	5.94	7.14
St. Louis (del.)	5.68	6.48	7.28	5.63	.	5.63	6.28	10.08††[3]	5.78	5.93	7.13
St. L. (w'hse)	5.48	6.28	7.08	5.43		5.43	6.08	9.88††[3]	5.58	5.73	6.93
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
KansCity(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Omaha, Nebr. -	6.13‡	...	8.33	6.13		6.18	6.98	..	6.18	6.38	7.83
Birm'hm(city) .	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05[3]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A (w'hse)..	6.35	7.90	8.85[3]	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
San Francisco..	6.65	7.80[3]	8.65[3]	6.60	...	6.45	8.20	...	6.45	6.50	8.60
Seattle-Tacoma.	7.05	8.60[3]	...	7.30	...	6.75	9.10	10.65	6.70	6.75	8.80

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [8]—3500 lb and over.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, LocRhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73; chemical-bonded chrome brick, $77; magnesite brick, $99; chemical-bonded magnesite, $88.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic dead-burned, ⅝" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Nario, Clay Center, Woodville, Gibsonburg, Bettsville, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	*17.00*

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	*$38-$39*
Domestic scheelite, del.	*nominal*

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$19.50
45% no ratio	20.00
48% no ratio	27.00
50% no ratio	28.00-28.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $75, Palmerton, Pa.; $75, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l., packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max, 7% Si. Special Grade: (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.3c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 28.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65 - 68%), Contract, lump bulk, 1.50% C grade, 18-20% Si 9.60c per lb of alloy, carload packed, 10.35c, ton lot 11.25c, less ton 12.25c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%,

(*Please turn to page* 164)

Metal Price Controls Expected

Copper, tin and aluminum probably will be first of the nonferrous metals to be regulated by government under its plan for economic mobilization. Nickel advances 2½ cents

New York—Establishment of price controls over many commodities seems inevitable. Officials of metal-producing and metalworking industries were awaiting further details last week on the government's plans for economic mobilization to meet the present emergency. Copper, tin and aluminum, in addition to steel, probably will receive prompt attention of the price control agency.

With the exception of tin, most major nonferrous metal prices have remained stable despite terrific pressure on producers to cover steadily expanding demands. However, nickel advanced 2.50 cents a pound last week to the basis of 50.50c for electrolytic nickel, including the 1.25-cent import duty. International Nickel Co. attributed the advance to a wage increase of 6.50 to 8 cents an hour at its Canadian plant. The price had been 48.00c a pound since May 31, 1950. Nickel oxide, sinter and other forms of nickel, including rolled mill products, are increased in line with the base price advance.

Mond Nickel Ltd., the company's United Kingdom subsidiary, made corresponding increases.

Nickel production in Canada in 1950 will approximate 125,000 tons, the largest for any peacetime year. "Although nickel, like other metals, remains in tight supply, military requirements are being met in full and shipments are being made to government stockpiles," Dr. John F. Thompson, president, International Nickel Co. of Canada Ltd., said in his annual review of the nickel industry. "The trade's civilian requirements continue, however, to take the major portion of the world's supply . . . In September it was reported that the United States government was planning to reactivate its idle nickel facilities at Nicaro, Cuba, which were closed early in 1947. The production of this plant for the preceding year, 1946, was reported at approximately 25 million pounds."

Copper—National Production Authority issued an order last week, allocating copper scrap to "normal channels of distribution." This directive, effective Jan. 1, provides that only makers of copper raw materials—ingots, wire, brass and copper sheets, bars and forgings, etc.—can process scrap generated by their own operations. Other companies, which get copper scrap from their own manufacturing operations, must sell it to the following specified copper processors and dealers: Scrap dealers, refiners, brass mills, brass and bronze foundries, ingot makers and miscellaneous producers.

The copper scrap order prohibits "reconversion" deals in scrap unless specifically authorized by NPA. These are transactions in which an owner of scrap hires another company to remelt or process it for him while retaining title to the scrap.

Copper deliveries to consumers in November totaled 113,715 tons, a decline of about 8100 tons from the previous month, reports the Copper Institute. Producers' stocks at 51,805 tons were 5140 tons lower at the end of the month. Production of crude copper by primary producers in the United States was 82,442 tons, while that by secondary producers amounted to 7468 tons. Output of refined copper declined about 9000 tons to 101,410 tons. About 10,686 tons went into the government stockpile.

Zinc—Stocks of slab zinc held at about the lowest level possible at the end of November, totaling 9255 tons. Production during the month totaled 79,226 tons while shipments, now limited to new supplies, amounted to 79,079 tons. Unfilled orders on smelters' books total 60,799 tons. The government took 6175 tons in November compared with 5283 tons in October and 2005 tons in September.

Lead—Domestic consumers of lead are increasingly dependent upon foreign supplies. Imports of the metal during the first 10 months of this year totaled 348,555 tons, an increase of about 50 per cent from the 224,447 tons reported for the like 1949 period.

Die Casting Firm Expands

Detroit—Fort Die Casting Corp., transferred its complete operations to its new modern plant at Marysville, Mich. The increased and improved production facilities, especially in the fields of aluminum and large zinc die castings, will enable the corporation to more efficiently meet the increased production requirements of its customers. Improved rail and truck facilities and inside cranes will speed the flow of materials in and out of the plant.

The company is a contract manufacturer of die castings of aluminum, zinc and lead, primarily for the automotive, construction, appliance and radio-television industries.

October Aluminum Output Up

NEW YORK—Production of primary aluminum in the United States during October was about 2 million pounds above the average monthly output during the third quarter of the year, Donald M. White, secretary, Aluminum Association, reports. With a total of 125,830,495 pounds, the October production exceeded the September total of 118,898,418 pounds by almost 6 per cent, he added.

Referring to the aluminum industry's program to increase production of this strategic lightweight metal, Mr. White said that "the industry has been authorized by the government to reactivate as soon as possible certain reduction equipment heretofore idle for lack of economical electric power. The necessary high-cost power will be made available for the emergency, and these stand-by aluminum facilities will soon be producing for the national stockpile. Addition of considerable new capacity by industry members has also been approved by the government.

October shipments of aluminum sheet and plate by Association member companies totaled 108,170,099 pounds, Mr. White reported. This is about 3.5 million pounds above the third-quarter monthly average, but about 1.6 million pounds under the September total for these items.

Shipments of permanent - mold rough castings (except pistons) by member companies of the Association's Foundry Division totaled 3,907,941 pounds with a value of $1,929,094. These figures compare with third-quarter monthly averages of 2,698,273 pounds and $1,252,847, and September totals of 3,160,137 pounds and $1,478,316.

Copper Scrap Eases in West

San Francisco — Premium prices for scrap copper have virtually disappeared.

Previous to the issuance of the National Production Authority's order M-12, cutting the use of copper for nondefense purposes in the next quarter, scrap copper was enjoying a bonanza as a result of fantastic conversion deals.

Some dealers had received as much as 30.00c a pound for secondary copper. Now, they say, the price is down to between 25.00c and 26.00c. This still is a premium over the 24.5c, Connecticut valley, price for new red metal, but the quotation largely is nominal.

Smelters and users virtually have shut off their buying—at least temporarily. They want to take a look at their inventories—also restricted by the M-12 order.

Dealers insist, though, there is no surplus of scrap copper. Zinc scrap has gone up sharply, too; has not reacted with copper.

Brass Ingot Output Declines

Washington—Production of brass ingot decreased 6 per cent to 31,149 net tons in September, reports the Bureau of Mines. Production in the third quarter was 86,937 tons, 22 per cent more than in the second quarter and 41 per cent more than in the first three months of the year.

Output of refined copper from scrap, 88 per cent of which was made by primary refiners, declined to 38,368 tons from 46,544 tons in the second quarter and 54,545 tons in the first quarter. Production by brass mills from copper-base scrap declined 2 per cent. Activities of the latter plants were limited by a shortage of refined copper which caused a number of mills to reduce operations to three or four days a week. Wire mills consumed 196,130 tons of refined copper in the third quarter of 1950 compared with 181,013 tons in the second.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.
Brass Ingot: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 44.50c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.50c.
Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.
Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.
Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.
Secondary Aluminum: Piston alloys 31.00-32.00c; No. 12 foundry alloy (No. 2 grade) 30.50-31.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.50-33.00c; grade 2, 30.75-31.50c; grade 3, 30.00-30.50c; grade 4, 29.50-30.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.
Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.
Tin: Grade A, spot, prompt, 142.00; Dec., 141.00; Jan. 138.50; Feb. 136.50; Mar. 135.00.
Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 34.00c; English, 32.75c; Belgian, 32.75c, duty paid, New York.
Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 50.50c; 25-lb pigs, 53.00c; "XX" nickel shot, 54.00c; "F" nickel shot or ingots, for addition to cast iron, 51.00c. Prices include import duty.
Mercury: Open market, spot, small lots, New York, $118-$125, per 76-lb flask.
Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Reading, Pa.
Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.
Cobalt: 97-99%, $2.10 per lb for 500 lb (kegs); $2.12 per lb for 100 lb (case); $2.17 per lb under 100 lb.
Gold: U. S. Treasury, $35 per ounce.
Silver: Open market, New York 80.00c per oz.
Platinum: $90-$93 per ounce from refineries.
Palladium: $24 per troy ounce.
Iridium: $200 per troy ounce.
Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)
Sheet: Copper 39.93-41.68; yellow brass 36.86-38.28; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.57-51.91; phosphor-bronze grade A, 5%, 58.49-60.20.
Rods: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.26-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.83; 80%, 37.81-39.36.
Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.14-43.79; red brass, 85%, 41.45-43.05; 80%, 42.58.
Wire: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.
Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb lots 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots 29.35; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)
Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— R317-T4	17S-T4
0.125	52.0	....	....	
0.156-0.188	44.0	....	....	
0.219-0.313	41.5	....	....	
0.375	40.0	46.0	48.0	
0.406	40.0	....	....	
0.438	40.0	46.0	48.0	
0.469	40.0	....	....	
0.500	40.0	46.0	48.0	
0.531	40.0	....	....	
0.563	40.0	....	45.0	
0.594	40.0	....	....	
0.625	40.0	43.5	45.0	
0.688	40.0	....	45.0	
0.750-1.000	39.0	41.0	42.5	
1.063	39.0	....	41.0	
1.125-1.500	37.5	39.5	41.0	
1.563	37.0	....	....	
1.625	36.5	....	39.5	
1.688-2.000	36.5	....	....	

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)
Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 77.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)
Sheets, cold-rolled 53.00c. Strip cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb. 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.
Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 36.59-38.34c; oval 36.09-37.84c; cast 37.37c.
Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 55.6c, under 1000 lb 57.6c, f.o.b. Niagara Falls, N. Y.
Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,000 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.
Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 19.25c; over 200 lb 28.25c, f.o.b. Cleveland.
Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c, 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.
Nickel Chloride: 100-lb kegs, 33.50c; 400-lb bbl. 31.50c up to 10,000 lb, 31.00c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.
Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.
Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.
Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.
Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.
Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel, silver, 10%..	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)
No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; composition red brass 22.00-22.50; radiators 17.25; heavy yellow brass 17.00.

* Nominal.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)
No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

* Nominal

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)
Copper and brass: Heavy copper and wire, No. 1 20.00; No. 2 18.50; light copper 17.25; No. 1 composition red brass 16.50-17.00; No. 1 composition turnings 16.00-16.50; mixed brass turnings 11.00; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 11.00; clean heavy yellow brass 13.50; new brass rod ends 16.50-17.00; auto radiators 13.00-13.25; cocks and faucets, 14.75-15.00; brass pipe 15.75-16.00.
Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed babbitt 12.25-12.50.
Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.
Tin: No. 1 pewter 63.00-65.00; block tin pipe 90.00; No. 1 babbitt 58.00-60.00.
Aluminum: Clippings 2S 19.00-19.50; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. 14	24.50	16.80	17.50	142.00	19.00	32.00	50.50	80.00
Dec. 13	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 12	24.50	16.80	17.50	139.50	19.00	32.00	48.00	80.00
Dec. 11	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 8-9	24.50	16.80	17.50	141.00	19.00	32.00	48.00	80.00
Dec. 7	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 6	24.50	16.80	17.50	142.00	19.00	32.00	48.00	80.00
Dec. 5	24.50	16.80	17.50	139.50	19.00	32.00	48.00	80.00
Dec. 4	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00
Dec. 1-2	24.50	16.80	17.50	136.00	19.00	32.00	48.00	80.00
Nov. Avg.	24.50	16.80	17.50	137.71	19.00	32.00	48.00	80.00
Nov. 30	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumers prices, except as otherwise noted including brokers commissions, as reported to STEEL, Dec. 14, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Dec. 14	$45.50
Dec. 7	45.50
Nov. 1950	41.33
Dec. 1949	28.03
Dec. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$46.50
No. 2 Heavy Melt.	44.50
No. 1 Busheling	46.50
No. 1 Bundles	46.50
No. 2 Bundles	43.50
Heavy Turnings	*47.00-48.00*
Machine Shop Turnings	38.50
Mixed Borings, Turnings	38.50
Short Shovel Turnings.	40.50
Cast Iron Borings	*39.50-40.50*
Low Phos. Steel	*56.00-57.00*

Cast Iron Grades

No. 1 Cupola Cast	*57.00-58.00*
No. 1 Machinery Cast	*67.00-68.00*
Charging Box Cast	*55.00-56.00*
Heavy Breakable Cast	*54.00-55.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.50
Rails, Random Lengths	*64.00-65.00*
Rails, 2 ft and under	*68.00-69.00*
Rails, 18 in. and under	*69.00-70.00*
Railroad Specialties	*64.00-65.00*

CLEVELAND

(Delivered Consuming Plant)

No. 1 Heavy Melt. Steel	$45.50-46.00†
No. 2 Heavy Melt. Steel	43.50-44.00†
No. 1 Busheling	45.50-46.00†
No. 1 Bundles	45.50-46.00†
No. 2 Bundles	40.00-42.00
Machine Shop Turnings	37.50-38.00
Mixed Borings, Turnings	*39.00-40.00*
Short Shovel Turnings	*39.00-40.00*
Cast Iron Borings	39.50-40.00
Low Phos.	48.00-48.50

Cast Iron Grades

No. 1 Cupola	65.00-66.00
Charging Box Cast	53.00-54.00
Stove Plate	55.00-56.00
Heavy Breakable Cast.	55.00-56.00
Unstripped Motor Blocks	44.00-45.00
Brake Shoes	50.00-51.00
Clean Auto Cast	65.00-66.00
Burnt Cast	46.00-47.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50
R.R. Malleable	72.00-73.00
Rails, 3 ft and under	70.00-71.00
Rails, 18 in. and under	71.00-72.00
Rails, Random Lengths	64.00-65.00
Cast Steel	58.00-59.00
Railroad Specialties	60.00-61.00
Uncut Tires	60.00-61.00
Angles, Splice Bars	65.00-66.00

† Plus applicable springboards

VALLEY

No. 1 Heavy Melt. Steel	$46.00-46.50†
No. 2 Heavy Melt. Steel	44.00-44.50†
No. 1 Bundles	46.00-46.50†
Facty. Prod. Bundles	46.00-46.50†
No. 2 Bundles	40.50-42.50
Machine Shop Turnings	38.00-38.50
Short Shovel Turnings.	40.00-40.50
Cast Iron Borings	40.00-40.50
Low Phos.	48.50-49.00

† Plus applicable springboards

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$45.00
No. 2 Heavy Melt. Steel	43.00
No. 1 Busheling	43.00
No. 1 Bundles	45.00
No. 2 Bundles	42.00
Short Shovel Turnings.	39.00
Machine Shop Turnings	37.00
Mixed Borings, Turnings	37.00
Low Phos. Punchings and Plate, elec. fur. grade	50.00
Low Phos. Plate, 5 ft & Under	50.00
Elec. Furnace Bundles	*48.00-49.00*
Heavy Turnings	*45.00*
No. 1 Chemical Borings	*45.00*
Knuckles and couplers	*56.00-58.00*
Steel car wheels	*56.00-58.00*

Cast Iron Grades

No. 1 Cupola Cast	52.00-53.00
No. 1 Machinery Cast	*58.00-60.00*
No. 1 Yard Cast	49.00-50.00
Charging Box Cast	*54.00-55.00*
Heavy Breakable Cast	*54.00-55.00*
No. 1 Wheels	*70.00**
Malleable	*74.00*

* Nominal

CINCINNATI

No. 1 Heavy Melt. Steel	*$45.25*
No. 2 Heavy Melt. Steel	*43.25*
No. 1 Busheling	*45.25*
No. 1 Bundles	*45.25*
No. 1 Black Bundles	*42.25*
Machine Shop Turnings	*33.00*
Short Shovel Turnings	*34.00*
Mixed Borings, Turnings	*33.00*
Cast Iron Borings	*34.00*

Cast Iron Grades

No. 1 Cupola Cast	70.00
Charging Box Cast	*60.00*
Stove Plate	*55.00*
Heavy Breakable Cast	*56.00*
Unstripped Motor Blocks	*42.00*
Brake Shoes	*37.00*
Clean Auto Cast	70.00
Drop Broken Cast	72.50
Low Phos., 18 in. and under	62.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*45.75*
R.R. Malleable	*64.00*
Rails, Rerolling	*65.00*
Rails, Random Lengths	*65.00*
Rails, 18 in. and under	72.50

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$38.25-39.00
No. 1 Bundles	*40.25-47.00*
No. 2 Bundles	37.25-39.00
No. 1 Busheling	*40.25-47.00*
Machine Shop Turnings	32.25-33.00
Forge Flashings	*40.25-47.00*
Short Shovel Turnings.	34.25-35.00
Cast Iron Borings	34.00-35.00
Punchings & Plate Scrap	42.75-47.00

Cast Iron Grades

No. 1 Cupola Cast	59.00-61.00
Heavy Breakable Cast.	48.00-51.50
Clean Auto Cast	62.00-64.00

BUFFALO

No. 1 Heavy Melt. Steel	*$44.50-45.25*
No. 2 Heavy Melt. Steel	*42.50-43.25*
No. 1 Busheling	*42.50-43.25*
No. 1 Bundles	*43.50-44.25*
No. 2 Bundles	*41.50-42.25*
Machine Shop Turnings	*36.50-37.25*
Mixed Borings, Turnings	*36.50-37.25*
Cast Iron Borings	*36.50-37.25*
Short Shovelings	*38.50-39.25*
Low Phos.	*48.25-49.00*

Cast Iron Grades

No. 1 Cupola	*52.00-53.00*
No. 1 Machinery	*55.00-56.00*
Malleable	*60.00-61.00*

Railroad Scrap

Rails, 2 ft and under	*60.00-61.00*
Rails, random size	*55.00-56.00*
Railroad Specialties	*55.00-56.00*

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$39.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	38.00-39.00
No. 1 Bundles	39.00
No. 2 Bundles	36.00
Mixed Borings, Turnings	31.00
Machine Shop Turnings	31.00
Short Shovel Turnings.	33.00
Punchings & Plate Scrap	41.50
Low Phos. Plate, 5 ft & under	41.50
Elec. Furnace Bundles.	41.50

Cast Iron Grades

No. 1 Cupola Cast	*45.00-46.00*
No. 1 Machinery	*49.00-50.00*
Charging Box Cast	*44.00-45.00*
Heavy Breakable	*44.00-45.00*
Unstripped Motor Blocks	*41.00-42.00*

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$32.50-36.00
No. 2 Heavy Melt. Steel	33.50-34.00
No. 1 Bundles	35.50-36.00
No. 1 Busheling	33.50-34.00
Machine Shop Turnings	27.50-28.00
Short Shovel Turnings.	29.50-30.00
Mixed Borings, Turnings	28.00-28.50
Bar Crops and Plate.	44.50-45.00
Punchings & Plate Scrap	44.50-45.00
Chemical Borings	31.00-32.00

Cast Iron Grades

No. 1 Cupola Cast	41.00-42.00
Mixed Cast	39.00-40.00
Heavy Breakable Cast.	38.50-39.50
Stove Plate	38.00-39.00

CHICAGO

No. 1 Heavy Melt. Steel	$45.00
No. 2 Heavy Melt. Steel	43.00
No. 1 Bundles	45.00
No. 2 Bundles	42.00
Machine Shop Turnings	37.00
Mixed Borings, Turnings	37.00
Short Shovel Turnings.	39.00
Cast Iron Borings	37.00
Low Phos.	52.00-54.00
Elec. Furnace Bundles	*46.00-48.00*
Heavy Turnings	*41.00-42.00*
Cut Structurals	*50.00-51.00*

Cast Iron Grades

No. 1 Cupola Cast	*62.00-64.00*
Clean Auto Cast	*62.00-64.00*
No. 1 Wheels	57.00-58.00
Stove Plate	*49.00-50.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00*
Malleable	*73.00-75.00*
Rails, Rerolling	*66.00-68.00**
Rails, Random Lengths	59.00-60.00
Rails, 2 ft. and under.	66.00-67.00
Rails, 18 in. and under	67.00-68.00
Railroad Specialties	*60.00-61.00**
Angles, Splice Bars	62.00-63.00

* Brokers' buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	$39.00-40.00
No. 2 Heavy Melt. Steel	35.00-36.00
No. 1 Busheling	36.00-37.00
No. 2 Bundles	34.00
Machine Shop Turnings.	31.00-32.00
Mixed Borings, Turnings	28.00
Short Shovel Turnings.	34.00
Cast Iron Borings	28.00
Bar Crops and Plate.	46.00-47.00
Cut Structurals	46.00-47.00

Cast Iron Grades

No. 1 Cupola Cast	59.00-60.00
Stove Plate	59.00-60.00
No. 1 Wheels	nominal

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00
R.R. Malleable	nominal
Rails, Rerolling	60.00-61.00
Rails, 2 ft and under.	65.00-66.00
Angles and Splice Bars.	59.00-60.00

ST. LOUIS

No. 1 Heavy Melt. Steel	*$46.00-48.00*
No. 2 Heavy Melt. Steel	*40.75-41.50**
No. 1 Bundles	*45.00-47.00*
No. 2 Bundles	*39.75-40.50**
Machine Shop Turnings	*36.50*
Short Shovel Turnings	*38.50*

Cast Iron Grades

No. 1 Cupola Cast	60.00-62.00
Charging Box Cast	51.00-53.00
Heavy Breakable Cast.	56.00-58.00
Brake Shoes	*51.00-53.00*
Clean Auto Cast	64.00-65.00
Burnt Cast	*49.00-51.00*

Railroad Scrap

R.R. Malleable	64.00-66.00
Rails, Rerolling	65.00-67.00
Rails, Random Lengths	*60.00-62.00*
Rails, 2 ft and under.	63.00-64.00
Uncut Tires	55.00-57.00
Angles, Splice Bars	*63.00-64.00*
Railroad Specialties	57.00-59.00

* F.o.b. tracks

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	30.00
No. 2 Bundles	28.00
No. 3 Bundles	25.00
Machine Shop Turnings	16.00
Low Phos. Electric	45.00

Cast Iron Grades

No. 1 Cupola Cast	46.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	30.00
Rails, Random Lengths	30.00

SEATTLE

No. 1 Heavy Melt. Steel	$28.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Busheling	25.50-26.00
Nos. 1 & 2 Bundles	25.50-26.00
No. 3 Bundles	22.00
Machine Shop Turnings	20.00
Mixed Borings, Turnings	20.00
Punchings & Plate Scrap	37.50-40.00
Cut Structurals	37.50-40.00

Cast Iron Grades

No. 1 Cupola Cast	40.00-42.00
Heavy Breakable Cast.	36.00
Stove Plate	35.00
Unstripped Motor Blocks	33.00-35.00
Malleable	33.00-35.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	29.00
Railroad Malleable	35.00
Rails, Random Lengths	29.00-30.00
Angles and Splice Bars	29.00-30.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	28.00
No. 2 Bundles	26.00
No. 3 Bundles	22.50
Machine Shop Turnings	16.00
Punchings & Plate Scrap	39.00

Cast Iron Grades

No. 1 Cupola Cast	43.00-48.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	nominal
Rails, Rerolling	45.00

HAMILTON, ONT.

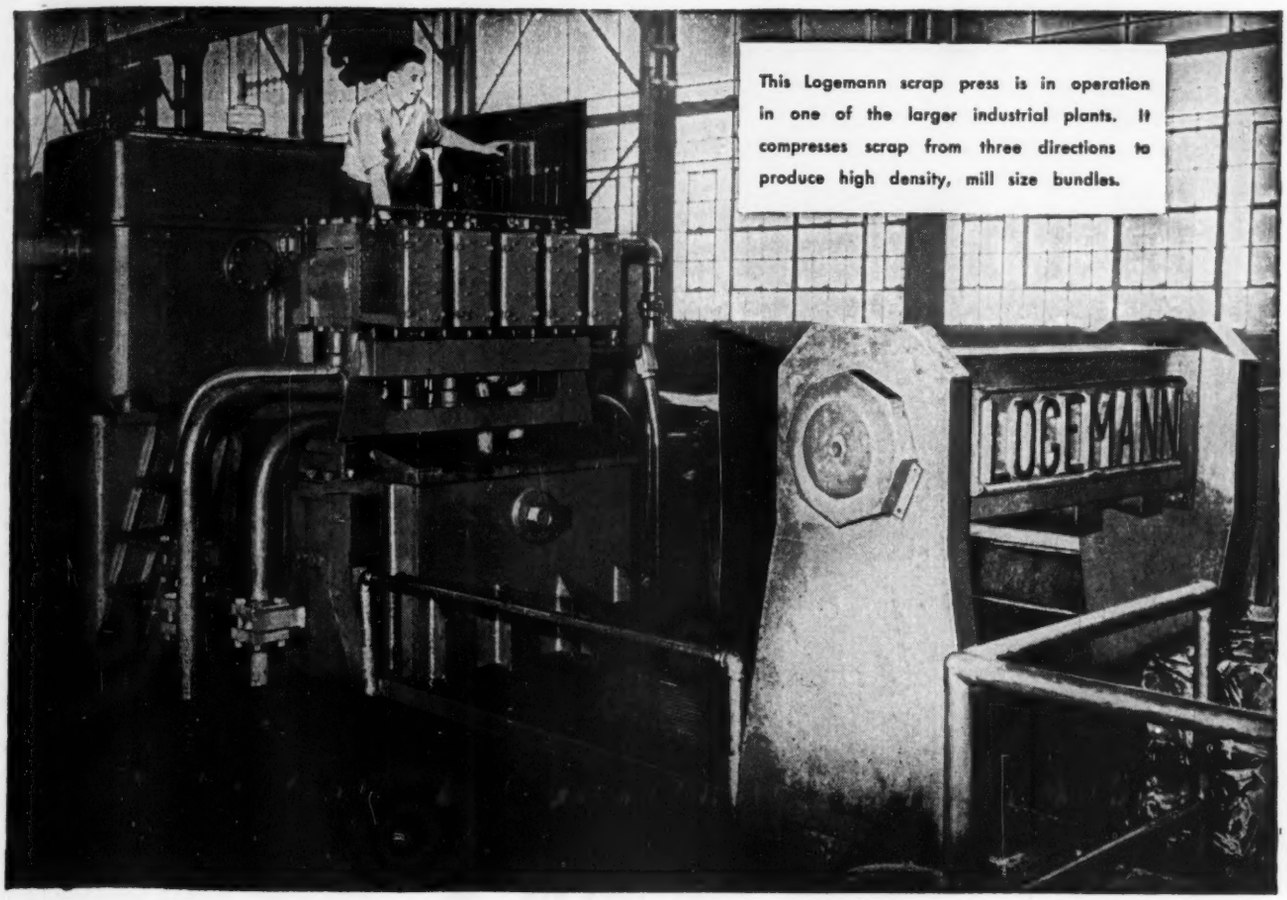
(Delivered prices)

Heavy Melt.	**$30.00**
No. 1 Bundles	**30.00**
Mechanical Bundles	**28.00**
Mixed Steel Scrap	**28.00**
Mixed Borings, Turnings	**23.00**
Rails, Remelting	**30.00**
Rails, Rerolling	**33.00**
Busheling	**24.50**
Bushelings new factory, prep'd	**28.00**
Bushelings new factory, unprep'd	**23.00**
Short Steel Turnings	**23.00**

Cast Iron Grades*

No. 1 Machinery Cast.	**45.00**

* F.o.b. shipping point.



This Logemann scrap press is in operation in one of the larger industrial plants. It compresses scrap from three directions to produce high density, mill size bundles.

Self-contained.....
Triple Compression..
Automatically Controlled

LOGEMANN SCRAP PRESSES

handle high tonnages with minimum labor . . . at low cost!

LOGEMANN METAL BALERS

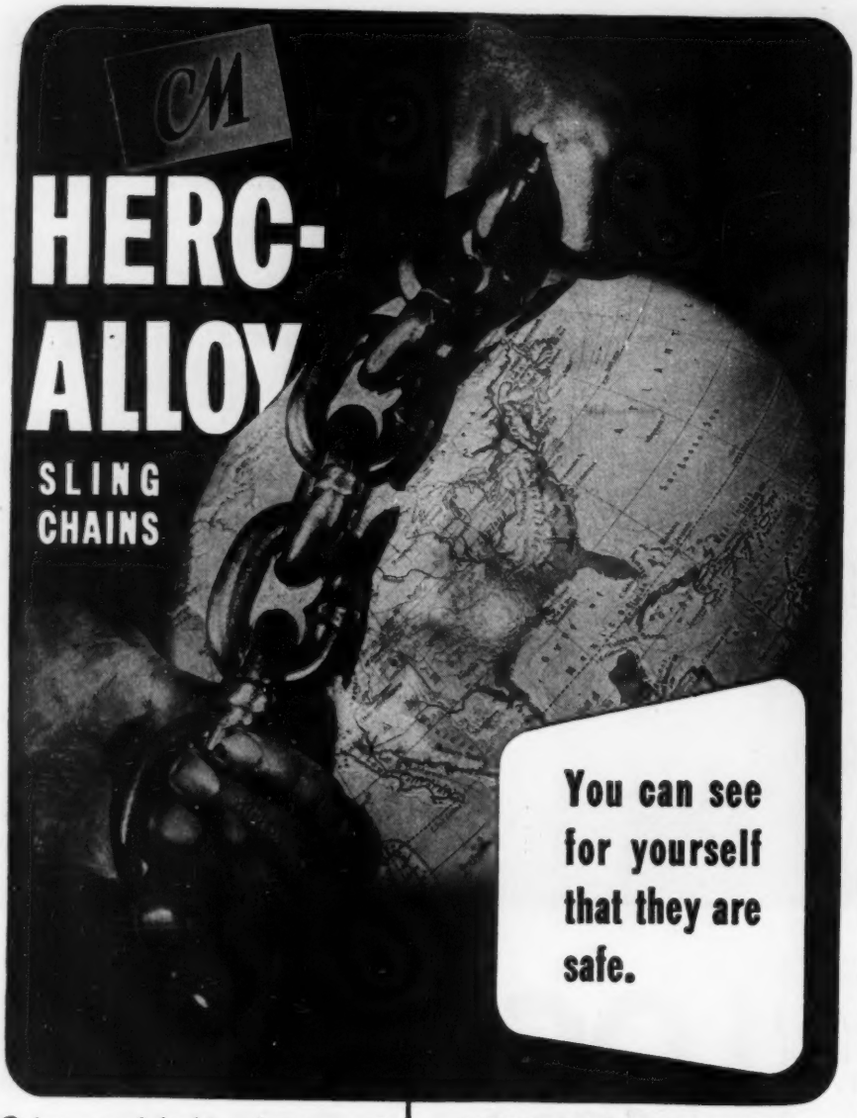
. . . are built in a large range of sizes to meet specific conditions. Let Logemann's engineering service help you arrive at the most efficient and economical way of handling your scrap.

The compact unit illustrated is completely self-contained with oil tank and pump located directly over the press . . . utilizing the advantages of short pipe lines. Automatic controls, mounted in front of pump, give the operator full visibility at all times. Controls operate rams successively within a single rigid box. There is no complex construction which means there is *no need for specially-trained maintenance crews.*

Both two-ram and three-ram models are available with automatic controls or for manual manipulation.

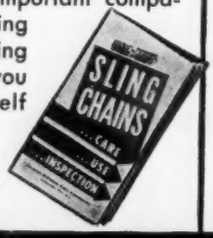
Logemann Bros. Co. have specialized in the production of scrap metal presses for sheet mills, stamping plants, scrap yards, and metal manufacturing plants of all types for nearly 75 years. Write for full information—please state the nature of your scrap and tonnage.

LOGEMANN BROTHERS COMPANY
3164 W. Burleigh Street • Milwaukee 10, Wisconsin



● Just one of the big advantages of HERC-ALLOY Sling Chains is that you can determine their serviceability by a simple visual inspection.* Ordinary steel or iron chains, on the contrary, grow dangerously brittle with age... an insidious threat to the safety of men and materials. That's why more and more of the important companies are standardizing on HERC-ALLOY Sling Chains... because you can see for yourself that they're safe.

*Write for your copy of this new, informative booklet. No charge.



HERC-ALLOY FEATURES

- America's *first* alloy steel sling chain... first to bear a serial number.
- *Every* CM HERC-ALLOY Sling Chain is alloy steel throughout... links, rings, hooks. There is only one grade... *the best.*
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INSWELL electric method.
- HERC-ALLOY Chains should never be annealed.
- HERC-ALLOY Chains are lighter... stronger... easier to handle... outlast ordinary chains 4 to 5 times... cost less on the job.

HERC-ALLOY... the chain you can *SEE* is safe

COLUMBUS-McKINNON
CHAIN CORPORATION
Affiliated with Chisholm-Moore Hoist Corporation
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

Sheets, Strip . . .

Sheet and Strip Prices, Page 143 & 144

Pittsburgh—Jones & Laughlin Steel Corp. raised cold-rolled sheet gage and width extras as follows: 10 cents per 100 pounds up to 48 in. wide; 5 cents for over 48 to 72 in. wide; reductions up to 30 cents for over 72 in.

Previously the company revised quantity extras in line with those for hot-rolled sheets published early in November.

The length bracket 12 to 24 in. in cold-rolled sheet extra table is eliminated in the new card. For lengths over 36 in. the extras have been increased 5 to 30 cents per 100 pounds, while in the 24 to 36 in. length bracket the extra has been reduced 5 cents for the 20 to 24 gage range.

Special killed steel extra has been advanced from 35 cents to 55 cents per 100 pounds; stretcher leveling from 50 to 75 cents; resquaring from 10 to 15 per cent.

Minor changes also were made in specification extras and revisions in packaging extras follow those of the hot-rolled sheet card.

Additional producers announced upward price adjustments last week on cold-rolled carbon strip and cold-finished spring steel.

NPA has amended Regulation M-1 increasing the percentage set aside the mills are obliged to make on hot and cold-rolled sheets from 5 to 10 per cent.

Cleveland—Tonnage allotments for February shipment are now being made by the light, flat-rolled steel producers. Quotas have been further reduced with larger tonnage earmarked for DO and other emergency-rated account. Additional priorities are expected to be approved over coming weeks with the result supply conditions in the general market are seen steadily deteriorating.

Chicago—Under the revised ceiling percentages for DO orders, a mill here finds March is the first month it can take additional orders for hot, cold-rolled and galvanized sheets. Electrical sheets call for April and tin plate February. This same producer states that quotas of hot and cold-rolled and galvanized sheets for civilian consumption will be only 50 per cent of normal in February.

Philadelphia—Minimum DO quotas on hot and cold-rolled sheets have been increased from 5 per cent to 10 per cent. Producers report additional DO rated business.

Cincinnati—Sheet mills making up February schedules find less tonnage, because of steady increase in DO orders, for unrated fabricators.

Birmingham—Each week sees a gradual pick-up in DO sheet orders. The supply situation is becoming progressively tighter making the position of those seeking a few more tons just about impossible. Handsome commission offers are being made to "locators" without, of course, any tangible results.

Los Angeles—With fabricators on edge over tightened sheet supplies premium tonnage sellers are advertising 12 gage hot-rolled at 13.5 cents per pound, and 12 gage galvanized sheet at 14 cents per pound delivered.

Tin Plate . . .

Tin Plate Prices, Page 144

Pittsburgh—Extra cards covering tin mill products were issued last week by U. S. Steel Corp. subsidiaries. New base prices as well as extras and deductions are effective Jan. 16, 1951, with exception of hollowware enameling black plate, effective Dec. 1 last.

Other tin plate interests have made their new price schedules, with exception of enameling black plate, effective Jan. 1.

A base price, previously announced, for each product group has been established. In case of hot-dipped the base price is $8.45 per base box for 1.25-pound coating. An extra of 25 cents is added for 1.50-pound coating; 45 cents for best coke; and 90 cents for Kanners special. Similarly an extra for electrolytic of 25 cents is added for 0.50-pound coating to base of $7.15 per base box for 0.25-pound; 65 cents is added for 0.75-pound coating. New base on hollowware enameling black plate is $5.85 per 100 pounds, with exception of Wheeling Steel Corp. which has established a commodity base price of $6.15 with applicable extras.

Basis weight differentials have been increased from 2 to 3 cents per pound. A new schedule of width differentials has been established, with widths over 26 to 28 in. inclusive, considered base, and applicable extras and deductions for narrower and wider widths than base.

A new schedule of length extras also has been incorporated in the extra cards.

Quantity extra of 30 cents is now charged for under 7500 pounds.

A quality extra of 5 cents is charged for low metalloid steel and 10 cents for temper T-6.

Extras for resquaring now are applicable for 195-pound basis weight and lighter as follows: 40 cents per base box for ends or sides and 60 cents for ends and sides.

A build up of mill price under the old and new pricing pattern for a popular item of hot-dipped and electrolytic is presented below.

50 pound Electrolytic
Multiple Package—Unassorted
90# Basis Weight 20 x 28
(Per Base Box)

New	Old
$7.15 (Base .25# ctg)	$7.50 Base
+.25 (.50# ctg)	—.90 (.50#)
7.40	6.60
—.30 (90# basis)	—.20 (90# basis)
7.10	6.40
—.05 (unassorted)	—.05 (Unassorted)
7.05	
—.10 (mult. package)	6.35
	—.10 (mult. package)
6.95	6.25

1.25 Pound Hot Dip (Cokes)
Multiple Package—Unassorted
90# Basis Weight 20 x 28
(Per Base Box)

New	Old
$8.45 Base 1.25#	$7.50 Base 1.50#
	—.20 (for 1.25#)
	7.30
—.30 (90# basis)	—.20 (90# basis)
8.15	7.10
—.05 (unassorted)	—.05 (unassorted)
8.10	7.05
—.10 (mult. package)	—.10 (mult. package)
8.00	6.95

In spring coiling, the words "Torrington" and "Versatile" are synonomous!

When producing springs to meet exacting requirements, the professional springmaker with a Torrington coiler is the man to see. He's the man who can supply your needs with accuracy, speed and economy.

On any special spring, our sales department will be glad to help you find a source of supply, or if need be, help the springmaker devise the tooling to produce it.

W-11

This is the W-11, one of fourteen versatile Torrington Spring Coilers:

SPECIFICATIONS

Wire Diameter Range: .015" to .072"

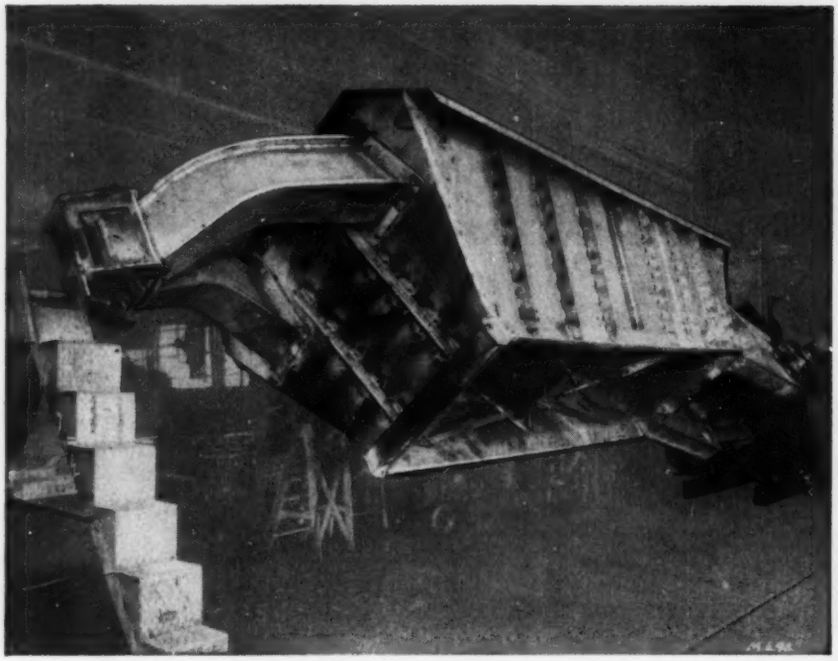
Wire Length per Spring: 0" to 42" (Extra Wire Feed Gears Available)

Coil Range (O.D.): 3/32" to 1-9/16"

Production: 23 to 190 springs per minute with variable speed drive

Torsion and other attachments available

The TORRINGTON MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT



VAN DORN

Weldments Feature

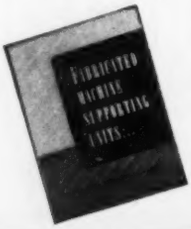
★ *Strength*

★ *Uniformity*

★ *Economy*

Yes, Van Dorn Weldments are widely known for their outstanding quality—for they are backed by Van Dorn's complete fabricating facilities . . . experienced design engineers . . . specially trained workmen . . . 77 years' experience in metal working.

Consult us about your requirements—no obligation, of course. The Van Dorn Iron Works Co., 2685 East 79th Street, Cleveland 4, Ohio.



Send For

FREE WELDMENT BOOK

● *Profusely illustrated; describes the many advantages of weldments, and Van Dorn's extensive facilities.*

Plates . . .

Plate Prices, Page 142

New York—Some plate mills are accepting non-rated work as well as rated work for February. However, allocations reflect broadening defense business and some arrearages, which means still less tonnage for the average commercial buyer. Light gage plates ¼ and 3/16 in. thickness, are in especially tight supply.

Philadelphia—Preference work in plates is featured by substantial tonnage for the Atomic Energy Commission. More new commercial tonnage has been allocated for February, as arrearages at various mills will be well worked off in January. Worth Steel Co. has advanced prices on clad steel plates 1½ cents per pound.

Birmingham—The picture in plates was tight when Republic had a reasonable tonnage available at Gadsden. Without that tonnage, now going into steel pipe, and with car building allocations, plate users are picking up what they can from far-removed sources and even getting an occasional shipment of the foreign product.

Los Angeles — Plate deliveries in dribbles coupled with acutely slim inventories cause some fabricators' work schedules to lag by as much as 60 days. Plate deliveries from eastern mills have virtually ceased.

Seattle—Important plate tonnages are pending. The smaller shops, lacking DO priorities, are finding it difficult to continue operations with steel inventories nearly exhausted. Increased tank storage capacity is planned by oil companies in Portland and Seattle.

Steel Bars . . .

Bar Prices, Page 142

Pittsburgh—One coldfinished bar interest has advanced size extras on carbon rounds $1 to $4 per ton and on carbon hexagons the increase ranges from $2 to $5.

Most coldfinishers are booked into second quarter and beyond on basis of probable further reduction in mill quotas.

Uncertain steel supply over coming months makes it increasingly difficult for coldfinishers to book additional tonnage other than rated orders. Most interests are operating within range of 60 to 75 per cent of capacity due to unbalanced inventories.

Cleveland—Higher prices are not deterring bar buyers' efforts to get in additional tonnage. However, little success in placing other than rated orders is reported. February quotas are expected to be further reduced to accommodate the rising emergency tonnage load on the mills. Indications are producers will move cautiously in booking orders on civilian goods account pending clarification of the outlook.

Philadelphia—Minimum DO quotas on hot carbon bars have been reduced to 5 per cent from 10. Actually to date there hasn't been as much direct DO rated business in hot carbon bars as in some other leading products. Bar demand well exceeds supply.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 142

Los Angeles — Demand for plain material is brisk and producers fail to keep pace with requirements. Mills completed first quarter allocations with January blanked out for December carryover.

Seattle—Rolling mills report continued capacity operations. Demand for merchant bars is strong, warehouses replacing inventories. Active inquiry for small tonnages of reinforcing bars is in evidence notwithstanding unfavorable outside working conditions. Several important Alaska military projects are pending. Plants are reducing backlogs.

Wire . . .

Wire Prices, Page 145

Boston—Rated orders up to limitations required for acceptance are booked through first quarter on various wire products. Scheduling of civilian volume for February depends on open capacity, and, while allocations will be down moderately, consumers of drawn carbon wire will not be too badly inconvenienced. Rated order limitation for alloy and stainless is five times that of carbon. On some products increasing volume is near or at the maximum point. Pressure for civilian tonnage is heavy, but in addition to dual distribution, tightening in rods holds down allocations. Cancellation of commodity railroad freight rate on wire, 19.00c per 100 pounds for a 23.00c rate, minimum 40,000 pounds, Worcester to Williamantic, Conn., is proposed.

Birmingham—Wire products remain scarce, but hardly as tight as a few weeks ago. Jobbers are still short on wire fencing but nails, due to a letup on building because of the weather and international situation, are in somewhat better supply. Most users of manufacturers' wire are being reasonably well supplied.

Tubular Goods . . .

Tubular Goods Prices, Page 146

Boston—Merchant steel pipe allotments for February vary, based on average monthly shipments during the first nine months, 1950. Distributors who failed to take full allocations last spring suffer monthly reductions. Inventories are low and the fact mills in some cases blanked out one month or more from November to January, 1951, is an additional handicap. Pipe line companies bringing natural gas to New England are inquiring for large tonnages of pipe for lateral connections with no openings available. One company, a large buyer of pipe with established position with the mills, may divert some tonnage. The Wallingford, Conn., producer of cold-rolled carbon electric resistance welded tubing advanced its price 10 per cent.

Chicago — In connection with its new price schedule dated Dec. 4, Inland Steel Co. discontinued publication of a price for seamless tube rounds.

Seattle—Business is slow with cast iron pipe agencies. Seasonal conditions, coupled with deferred deliveries make it difficult to compete.

puttin's a breeze . . .
his mind's at ease

Yes sir, here's a chap that can really concentrate on a putt! He knows that a flash fire can't stop production at his plant . . . equipment, materials, buildings, and the lives of employees are fully protected with modern, approved C-O-TWO Fire Protection Equipment.

You, too, can have this same ease of mind about your factory, mill, warehouse, power station or research center. There are fire hazardous areas that particularly need C-O-TWO fast, positive fire protection: spray booths, dip tanks, solvent baths, electrical equipment enclosures, mixing vats, storage tanks, pump rooms, record vaults, store room, especially anywhere there's danger of flammable liquid or electrical fires. At many locations a C-O-TWO Combination Smoke Detecting and Fire Extinguishing System is a "must". The first trace of smoke in a protected area sounds an alarm . . . then fast, clean, nondamaging, non-conducting carbon dioxide blankets the fire, putting it out in seconds, before it spreads and causes extensive damage . . . no lingering odors, no water damage with carbon dioxide.

So, whatever your fire protection problem, let an expert C-O-TWO Fire Protection Engineer help you in planning complete and up-to-date fire protection facilities now. Write us today . . . tell us about your particular fire hazards, our experience is at your disposal . . . there is no obligation of course.

TRADE MARK C-O-TWO REG. U.S. PAT. OFF.

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

Affiliated with Pyrene Manufacturing Company

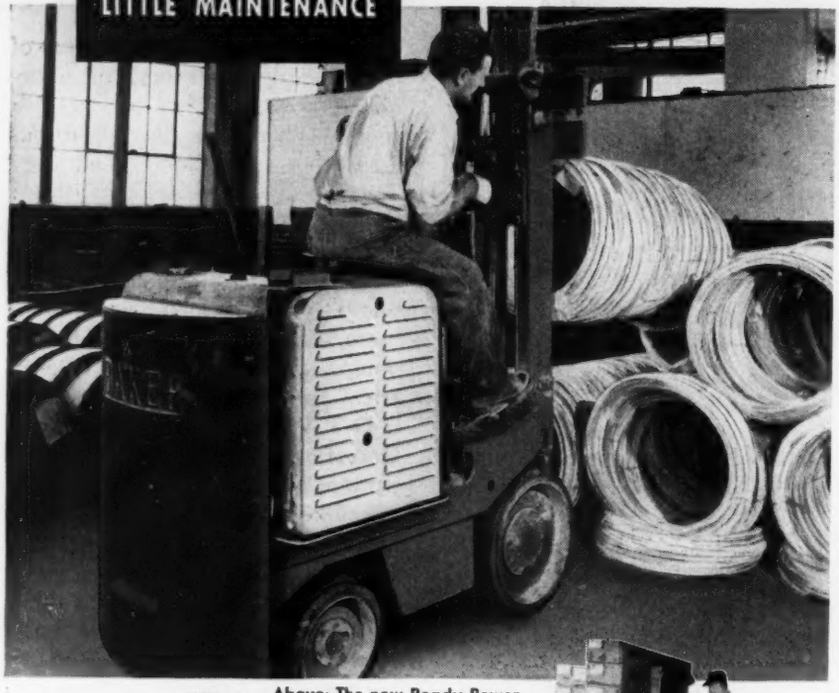
MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

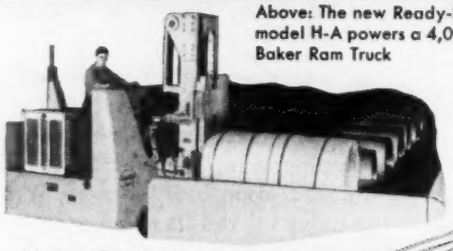
Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

ANY Electric Truck can be Equipped with READY-POWER

CONTINUOUS DUTY
GREATER EFFICIENCY
LOW OPERATING COST
LITTLE MAINTENANCE

Only Ready-Power Gas-Electric Units provide efficient electric truck operation *continuously*. Because power is generated right on the truck chassis there are no limitations . . . no slow-downs. Ready-Power Units are famous for operating economy, too. There are models to improve the performance of all types and sizes of electric trucks.

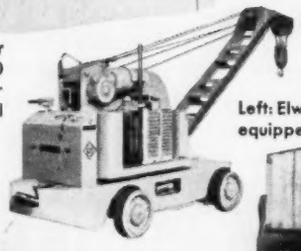




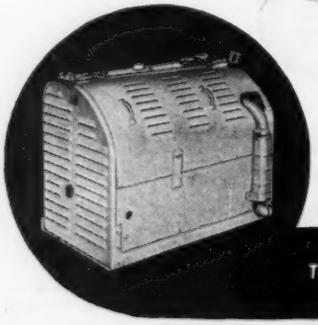
Above: The new Ready-Power model H-A powers a 4,000 lb. Baker Ram Truck

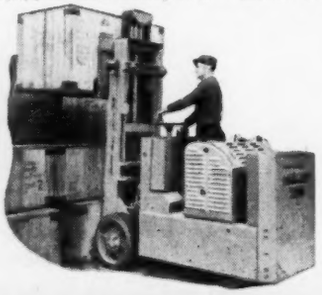
Above: This 3,000 lb. Lewis-Shepard Fork Truck is equipped with a Ready-Power model P

Above: Ready-Power model J gives this 30,000 lb. Baker plenty of power for handling heavy steel coils



Left: Elwell-Parker 10,000 lb. Crane Truck equipped with Ready-Power model L-2





Right: Ready-Power model H powers this 4,000 lb. Mercury Fork Truck

THE READY-POWER CO.

3824 Grand River Ave., Detroit 8, Michigan

Stainless Steel . . .

Stainless Steel Prices, Page 146

Pittsburgh—Some stainless steel producers increased heat treating extras applicable to cold-rolled cutlery strip from 3¼ to 6½ cents per pound. Differential for selenium grades has been increased from 1.5 to 4 cents per pound. Stainless specialties and super-alloys are up about 5 per cent. Stainless clad plates are up 1½ cents per pound across the board.

Structural Shapes . . .

Structural Shape Prices, Page 142

New York—Structural deliveries are becoming increasingly extended, with certain larger shops booked into early 1952. Few, if any, of these larger fabricators can do under 11 months, except for possibly a relatively few small jobs which can be taken more or less in stride. Smaller shops are booked well into second half of next year and they along with the others could extend their backlogs further were they able to figure more definitely on shape supply. Deliveries have become so far extended that builders are hesitant about going ahead on various projects; nevertheless there is still a substantial volume of inquiry, involving principally bridge construction, power plant work and various other industrial projects.

Boston—Fabricating shops in some cases appear to be overbooked considering growing difficulty in obtaining plain material. Backlogs include considerable public work, including schools, for which preferential stautus is sought. Allied steel products for construction, steel sheet piling notably, are more extended, the latter through third quarter. Fabricated and erected structural prices are higher, emphasizing the trend upward before the recent increase in plain material costs. Contracts include around 650 tons, power transmission towers, Sudbury and North Weymouth, Mass., while Stone & Webster Engineering Corp., Boston, placed 875 tons scale plant, Fairbanks-Morse Co., Kansas City, Mo.

Philadelphia—Structural fabricators are having difficulty maintaining production because of steady shrinkage in incoming shipments of shapes and universal plates.

Seattle—Several public works projects involving heavy tonnages of structurals are pending. Local plants are handicapped by insufficient supplies of materials, but are making adjustments with the objective of maintaining present operations and holding working crews together. Demand continues active for small tonnages.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 146

Pittsburgh—Higher steel and wage costs have forced fastener producers to advance prices in line with increases previously published earlier this month. Most nut and bolt producers have been given assurance they can extend certified tonnage orders received from railroad customers and other indirect or direct military needs.

Ferroalloys . . .

Ferroalloy Prices, Page 147

New York—New base prices are established for certain ferroalloys: For low-carbon ferrochrome, 30.50c for 0.06 per cent carbon; 50 per cent ferrosilicon, 12.40c; 65 per cent ferrosilicon, 15.40c. Silicomanganese is quoted 9.90c, 1.50 per cent carbon; silicon briquets, 6.95c for the large size; silicomanganese briquets 11.15c. All increases are across the board with no change in quality, sizing, packing or spot differentials.

Due to higher tungsten ore costs, tungsten alloy prices were increased Dec. 6. Ferrotungsten base price is $3.25 per pound of contained tungsten; tungsten powder, $4.15 a pound.

Rails, Cars . . .

Track Material Prices, Page 145

New York—Domestic freight car orders in November declined, report the American Railway Car Institute and the Association of American Railroads, in a joint statement, totaling 10,573 cars against 21,893 in October. Of the new units ordered, 9573 will be built in commercial shops and 1000 in railroad shops.

Cars on order as of Dec. 1 were 126,870, against 122,148 on Nov. 1, and 14,146 a year ago. The December backlog involves 91,512 for commercial shops and 35,358 for railroad shops.

November deliveries totaled 5791, against 5501 in October. Of the total delivered last month, 3352 were built by commercial shops and 2439 by railroad shops.

Of the cars on order and undelivered as of Dec. 1, 49,407 were plain box cars, 29,316 gondola cars and 21,436 hopper cars.

Iron Ore . . .

Iron Ore Prices, Page 147

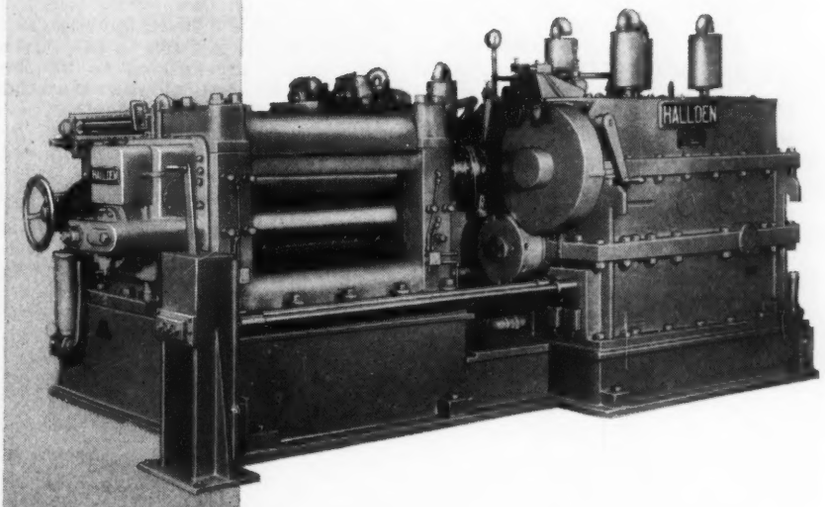
Cleveland—Lake Superior iron ore shippers will fall about 1.7 million tons short of their season's goal of 80 million tons. Considering the late shipping start and unusually severe storms near the close, shipment of about 8.7 million tons in excess of the 1949 movement is considered highly satisfactory.

Shipments for the week ended Dec. 11 came to 385,022 tons, bringing the total for the season to date to 78,174,310 tons compared with 69,556,269 tons for the entire 1949 season.

Preliminary totals for the season have been reported for the two Canadian ports and for all United States ports except Escanaba and Marquette. Total for the season to Dec. 11, 1950, and for the entire 1949 season are:

	To Dec. 11, 1950	Season 1949
U. S. Ports		
Escanaba	4,998,668	3,816,109
Marquette	4,062,752	3,903,219
Ashland	4,889,937	4,263,314
Superior	26,425,111	25,298,709
Duluth	18,768,161	15,751,829
Two Harbors	17,089,983	14,763,497
Total	76,234,612	67,796,677
Canadian Ports		
Michipicoten	724,539	627,615
Port Arthur	1,215,159	1,131,977
Total	1,939,698	1,759,592
All Ports Total	78,174,310	69,556,269

HALLDEN AUTOMATIC SHEARS



RUGGED

Hallden Automatic Flattening and Cutting Off Machines are custom built by skilled craftsmen using only the finest materials. Their simple design makes them efficiently compact. Engineered with a low center of gravity, they are ruggedly constructed to keep pace with the tremendous speed and production of the most modern mills. Practically the only maintenance required is ordinary lubrication. The entire operation is completely automatic.

Take your shearing problems to Hallden.

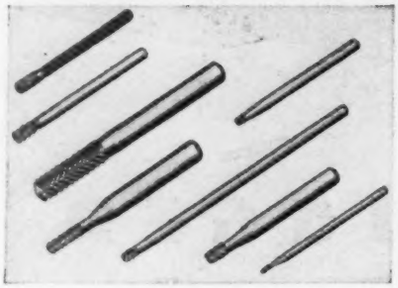
Sales Representatives
The Wean Engineering Co., Inc., Warren, O.
T. E. Dodds, Pittsburgh, Pa.
W. H. A. Robertson & Co., Ltd., Bedford, England

HALLDEN
the Shearing Specialists
THE HALLDEN MACHINE COMPANY
THOMASTON, CONNECTICUT

IT COSTS LESS

to have your precision metal parts made by

TORRINGTON



Special equipment and volume production enable us to save for you on a wide variety of precision parts made to order.

Typical are mandrels or spindles for mounted grinding wheels, abrasive points, felt wheels. Shank diameters to .500", close tolerances, centerless ground if desired. Chuck ends rounded, no burrs. Sharp, clear uniform knurls. Concentric tapers. Mandrels accurately hand-straightened.

We are also set up to make for you such parts as special rollers, studs, dowel pins, screw driver and ice pick blades, surgical and dental instruments, pen and pencil barrels, instrument shafts and pivots, special needles, etc.

Send your prints and specifications today for a prompt quotation.

THE TORRINGTON COMPANY
Specialty Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 146

Philadelphia—Stringency in oven foundry coke is increasing. Buyers in this area are directing increasing attention to the beehive oven product.

Pittsburgh—Increased production costs forced another advance in the Neville Island, Pa., oven foundry coke price of $1 per net ton to $23. Oven coke supply is expected to be one of the most critical raw material problems over coming months.

Pig Iron . . .

Pig Iron Prices, Page 142

Philadelphia—Pig iron supply is becoming more critical. More consumers are appealing to Washington for help but unless requirements are for defense work they are given little encouragement.

Pittsburgh—Foundry jobbing shops soon may be forced to again advance castings prices. Since the last advance of 10 to 15 per cent early in September, oven foundry coke price has advanced $2; cast scrap $5 to $8, pig iron $3 and wages 7.5 per cent. There also is the possibility employees will seek another increase in anticipation of a freeze on wages as well as prices.

Credit restrictions and materials shortages already have forced a drop in bookings among foundries serving consumer goods industries. However, order backlogs generally are extended 60 days or more. Unusually heavy demand persists for high temperature alloys. Imported pig iron is reported available on the Pacific Coast at $70 per gross ton, San Francisco.

Cleveland—Continued tightening in merchant pig iron supply is indicated. Producers are allotting tonnage to customers on the basis of past sales records. Only chance for any easing in supply conditions hinges on possible curtailment of civilian goods production in certain directions due to credit and other curbs. However, even in such event rising defense requirements are likely to take up any slack that appears. All blast furnaces in this immediate district now are on the active list, Republic Steel last week relighting its No. 5 stack which had been down for repairs since early in October.

Cincinnati—Pig iron shipments are holding fairly well to recent volume despite some furnace difficulties. Some slicing of recent allotments may develop as DO ordering grows.

Chicago—Pig iron is under close allocation as demand exceeds production by a wide margin. High prices and scarcity discourage substitution of scrap by foundries beyond a certain point. The carbon factor also favors use of iron. Occasional tonnages of foreign iron give an assist but quantities are too limited and infrequent and price continues to inch up. Six months ago high phosphorus iron from abroad could be bought at the same price as domestic iron. Today such offerings figure approximately $95 per ton delivered.

Birmingham—A $3 a ton increase in pig iron apparently means nothing so long as supply is of considerally more importance than price. In

SPECIFY dy chek dye penetrant metal inspection

Simplified Non-Destructive Testing . . .
Any Metal—Anywhere

FASTER,
CHEAPER,
MORE ACCURATE
Completely Portable, License-Free

Write for Details

dy chek COMPANY
Division of Northrop Aircraft, Inc.

1507 EAST BROADWAY
HAWTHORNE, CALIF.

either event, merchant melters report no letup in inquiries or in pressure from regular users. And that means a tighter pig iron situation than during World War II.

Los Angeles—Difficulties at No. 1 blast furnace at Fontana plant of Kaiser Steel Corp. cut production of hot metal by 30 per cent. Increase of scrap charge to 65 per cent on Fontana's seven open hearths maintains ingot output.

Scrap . . .

Scrap Prices, Page 150

Pittsburgh — Yard dealers and crushers contend the relationship of basing point prices makes it impossible to bring in unprepared heavy melting steel and machine shop turnings from remote points for less than the ceiling formula price established here for prepared material. An increase in the cross hauling of scrap is expected to be another development arising out of the establishment of multiple basing point prices with mills reportedly absorbing freight on shipments from whatever remote point scrap happens to be available. One mill in the Valley is obtaining scrap on the Houston, Tex., price basis and absorbing around $15 freight. While the formula price for low phos is $2.50 above that for No. 1 heavy melting, bulk of open market tonnage is selling within a range of $56 to $57. Sharp advance recently occurred in prices for No. 1 machinery cast to a range of $67 to $68, and also for other scrap items reflecting growing scarcity of merchant iron plus recent advance of $3 a ton in pig iron prices. Additional strength also is noted in railroad items, with advances of $1 to $3 reported on sales last week.

New York— Heavier volume of buying at new and higher formula prices for steel grades is developing with indications movement of steelmaking scrap will be heavy during next 30 days. This is expected despite likelihood of controls which may involve rollback on prices, possibly within month. Cast scrap is higher, averaging close to $2 a ton with No. 1 machinery approximately $4 stronger.

Philadelphia—Bulk of tonnage in major open hearth grades of scrap is moving at the new formula levels. The market undertone is strong. One railroad recently sold some No. 1 railroad steel, which normally takes a premium of only $1 or so above the No. 1 heavy melting, at $49.60. Low phos is strong at $50 to $52, delivered, and is moving in certain cases at even higher levels.

Buffalo—Formula prices on steelmaking grades of scrap were boosted up to $5.75 a ton and new business to the extent of approximately 35,000 tons followed promptly with a number of leading dealers participating in sales. No. 2 bundles scored the biggest gain. Prices on No. 1 heavy melting advanced $3.25 while No. 2 material gained $4.75.

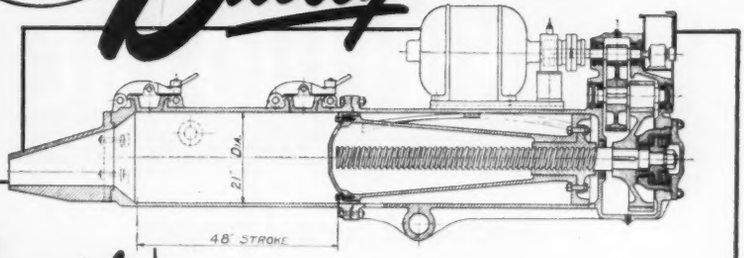
Detroit — Price of "free" open hearth scrap is still pushing up, but at a slower rate than was the case before the new formula prices were arrived at. On No. 1 grades the representative free market price is up $1 to $47. Other free grades are in strong demand, but there has been no significant change in price. Cast grades, for which the tone has been easier in the last two weeks, are perking again and some of the resistance to present prices is crumbling under the onslaught of high demand for castings and limited pig iron stocks.

Cleveland— Movement of scrap in this district is heavier at the higher levels. Several large dealers are reducing their yard stocks to the lowest practicable minimum, believing that the peak has been reached. Disposal of holdings is also stimulated by the belief there will be a rollback in scrap prices if the government issues mandatory price controls over the steel industry. There may be some slowdown in the movement of scrap if production is curtailed to any marked extent by a sweeping changeover to war production. There was a considerable lag in the flow of scrap when industry changed from a peacetime economy to war work at the beginning of World War II.

Cincinnati—Revision upward in formula prices for iron and steel scrap resulted in narrowing of the difference between No. 1 and No. 2 steel. The increases had been predicted, causing some speculative holding by dealers. This tonnage is now coming into the market. Demand

Long and Uniform Tapping Holes

Bailey CLAY GUN



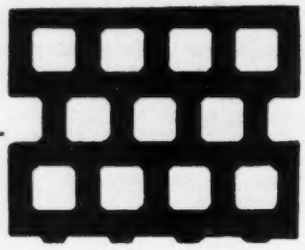
Powerful

A powerful electrically-driven piston assures unfailing performance.

Best results and safety in plugging blast furnace tapping holes are obtained with the Bailey Clay Gun. The special Bailey Lever Action forces the nose of the gun forward with positive accuracy. A powerful, motor-driven screw provides the piston pressure necessary to maintain long tapping holes.

WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD PITTSBURGH 16, PA.

Perforated metal screens
for any requirement



WITH facilities for producing any shape and size of perforations in any commercially rolled metal, of whatever gauge desired, Hendrick can furnish the most suitable form for a specific screening application.

To best meet certain requirements, Hendrick developed the "squaround" perforation illustrated. Other standard forms include round, square, hexagonal, diamond and slot perforations in hundreds of sizes of openings. Write for full information.

SEE OUR CATALOG IN SWEET'S

HENDRICK
Manufacturing Company
30 DUNDAFF STREET, CARBONDALE, PENNA.
Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

NON-FLUID OIL
TRADE MARK REGISTERED

Stays Alive Longer

Tests prove that NON-FLUID OIL stays "alive" longer than lubricating greases when used on ball and roller bearings—providing constant, dependable lubrication.

This is due to the unique process by which NON-FLUID OIL is made, and through which it acquires greater stability and higher protective properties than can possibly be afforded by grease lubrication. Even greases which do not dry out or harden after a period of time, actually become "dead" and have little lubricating qualities.

We invite you to send for testing samples which will prove our claim that NON-FLUID OIL stays "alive" l-o-n-g-e-r, outlasting ordinary lubricants 3 to 5 times.

NEW YORK & NEW JERSEY LUBRICANT CO.
292 Madison Avenue, New York 17, New York. Works: Newark, N.J.

WAREHOUSES: Atlanta, Ga. • Birmingham, Ala. • Charlotte, N. C. • Columbus, Ga. • Greensboro, N. C. • Greenville, S. C. • Chicago, Ill. • Detroit, Mich. • Providence, R. I. • St. Louis, Mo.

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

continues on a high level even though a large proportion of melters in the district have fair stocks for this season.

Chicago—Scrap, other than those grades falling in steel mill formula classification, continue to move upward or gather strength. Foundries are operating at high levels and pressing for scrap to augment inadequate receipts of pig iron. Foundry melting material is not plentiful. Bad weather has been interfering with scrap shipments, but last midweek movement was further impeded and in some cases halted altogether by the unauthorized strike of railroad switchmen.

St. Louis—Scrap buying started last week on new scrap price formula and stockpiling demand sent melting steel prices $1 to $5 higher. Formula applies here to No. 1 and 2 heavy melting, bundles, turnings and unprepared scrap. Mills here seldom take unprepared.

St. Louis arbitrary switching charge is $1 with No. 2 melting steel, for example, being quoted at $40.75 to $41.50 f.o.b. shippers' tracks for scrap originating in the St. Louis district, and $41.75 to $42.50 for that originating outside.

Birmingham—Scrap prices continue the strong upward trend even in the absence of posted increases. Movement of scrap is still sluggish due largely to adverse weather conditions of the past few weeks.

San Francisco—The cast iron market has shown a little weaker tone as pig iron has become a little easier to get. Steel scrap prices recently were revised upward around an average of $3.50 a ton. Steel mills raised their buying prices to attract a flow of scrap metal from the rural areas. Supplies are scarce and the area now is considered a minus territory insofar as scrap steel is concerned.

Seattle—Scrap continues the problem child in the steel industry. The market is very strong, sellers having the upper hand. Every domestic source is being scoured for material, 300 tons of shipyard scrap having been sold on bids last week. Cast iron is tighter, foundries being exceptionally busy for the season. Country collections are hampered by unfavorable weather. Pig iron is arriving from Europe, a recent full cargo charter at $8.25 a ton, freight, Pacific Coast delivery, being reported.

Warehouse . . .

Warehouse Prices, Page 147

Cleveland — Local warehousemen have been busy the past week adjusting their prices upward to offset increased steel costs and wages. In general, the warehouse markup in this area runs from $8 to $16 per ton over the product list.

Those warehouses under contract with the CIO union already have increased wages about in line with the raise granted in the basic steel industry, which averaged about 16 cents per hour. Distributors under contract with AFL and other unions are still negotiating but it is expected

USE
TITUSVILLE
UNEXCELLED
FACILITIES
for YOUR
Heavy Forgings

A—2000 Ton Forging Press, Electrically Operated.

A

B—Modern Milling Machinery and Equipment.

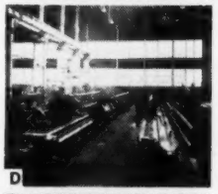
C—View of one Bay in our No. 2 Machine Shop.

B

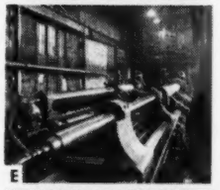
D—Typical Heavy Duty Boring Facilities.

C

E—Precision Boring Hollow Shafting.


D

F—Heat Treating Two 60,000 lb. Ship Forgings.


E

G—Testing and Assembly of Forged Hi-Pressure Valves.

F

With these and many other modern facilities, TITUSVILLE produces heavy FORGINGS, rough turned or finished to meet A.S.T.M., A. S. M. E. or A.P.I. Codes. Write for complete data.

G

STRUTHERS WELLS Corp.
TITUSVILLE FORGE DIVISION
TITUSVILLE, PENNA.
Struthers Wells

settlements will pretty much parallel the CIO agreements.

Demand on the warehouses is more insistent than ever. Consumers are meeting with increasing difficulty in filling their needs. It is significant, however, that no plant shutdowns of consequence have yet been reported for lack of steel. These will probably come next quarter when the supply pinch is expected to become really severe.

Alarming depletion of warehouse stocks over the past year or so is shown by figures collected by the American Steel Warehouse Association. Reports from 80 large distributors maintaining 172 separate warehouses throughout the country show that on Sept. 1, 1949, they held 1,089,000 tons of steel in stock. By Sept. 1, 1950, stocks had dropped 33.5 per cent to 725,789 tons, by Oct. 1. They were down 48.5 per cent to 563,784 tons, and by Nov. 1 they were off 52.5 per cent to 516,730 tons.

Cincinnati—Warehouse steel prices are higher, in adjustment to recent mill advances. Most schedules also show revisions in quantity extras. DO orders, because of lag in mill replacements, cut into tonnage available to other fabricators but even without government demands supplies would be tight. Stocks are badly out of balance, some items being unobtainable in any volume.

Philadelphia—Warehouse business is declining due to distributors' inability to obtain sufficient tonnage to maintain stocks. Most tonnage coming in is moved right out and much potential business is being turned away.

Pittsburgh—The warehouse price spread has narrowed considerably in recent years. Distributors have advanced base prices $9 to $15 per ton to offset recent increases in steel and wage costs. They also have reduced quantity differentials as follows: from 20 cents to 10 cents for 10,000 to 19,999 pounds; from 40 to 20 cents for 20,000 to 29,999 pounds.

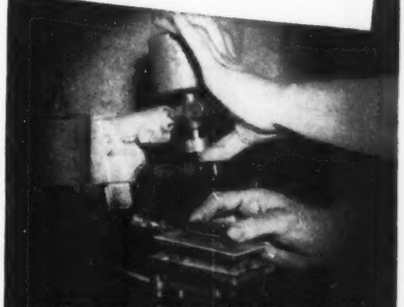
Chicago—Inventories of steel warehouses have shrunk to the point where little more contraction can occur. Business is pretty generally on a hand-to-mouth basis. Price increases of $8 to $16 per ton have been effected here by warehouses.

Birmingham—Warehouses are short on many items which are in greatest demand in this trade territory. A general warehouse price increase was effective as of Dec. 1.

Los Angeles — Undiminished demand for warehouse steel and retarded mill deliveries coupled with heavy warehouse shipments leaves some distributors' inventories at lowest point in their history.

Seattle — Wholesalers in Seattle, Tacoma, Wash., and Portland, Oreg., have revised prices upward in line with mill increases. Warehouses report buying on a hand to mouth basis, a reversal of conditions during the summer. Shop inventories are well down and buying is confined to immediate needs. Warehouse stocks are only 75 to 80 per cent of normal, and badly broken. Mills are indefinite

FOR FASTER
MASS-PRODUCTION
POLISHING...



A close-up of one station in a 12 head lens polishing machine converted for polishing hardened metal projector parts with Elgin DYMO Diamond Compound in the Bell & Howell Chicago plant. Exceptional stability of DYMO at comparatively high temperatures and dependable, *predictable* cutting made this high production technique possible . . . at a time savings of more than 70%!

ELGIN DYMO
DIAMOND COMPOUND

Elgin Dymo works faster and goes farther because precision graded particles of pure diamond, assisted by an exclusive Elgin vehicle, do the cutting. Elgin Dymo excels in actual shop convenience, too! It comes ready to use, each grade distinctly colored for instant identification, and it is universally soluble to simplify clean-up after polishing.

See how Elgin Dymo . . . available in all Bureau of Standards grades for any lapping or polishing job . . . will reduce your finishing costs and give you better results at the same time. Just mail coupon below for a free demonstration right in your own plant!

- - MAIL THIS COUPON TODAY - -

Yes, I'd like to see how DYMO speeds production line polishing.

NAME_____
POSITION_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

INDUSTRIAL PRODUCTS DIVISION
ELGIN NATIONAL WATCH CO.
ELGIN, ILLINOIS

PAGE WIRE

LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

ROUND
FLAT
OR
SHAPED

You draw the Shape
—Page can draw the Wire

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to 3/8"; width-to-thickness ratio not exceeding 6 to 1.

for Wire or Information about Wire—

Get in touch with Page!

ACCO Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

about deliveries on new business. Demand for warehouse goods is stronger than usual for this time of year.

Rail Strike Cuts Operations

Chicago — Railroad switchmen's strike is cutting into steel production here. Wisconsin Steel closed down its open-hearth department and banked one of three blast furnaces. Carnegie banked four of 10 active stacks at South Works and slightly reduced bessemer steel operations. Numerous steel consumers were affected by inability to receive material or get it switched into plants.

Canada . . .

Toronto, Ont.—Production of primary iron and steel shapes in Canada for August, 1950, amounted to 365,125 net tons, compared with 346,040 in July and 279,403 tons in August, 1949.

Primary iron and steel shapes shipped for sale in August, 1950, amounted to 221,995 net tons against 221,792 in July.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

5500 tons, steam plant, American Gas & Electric Co., Beverly, Ill., to American Bridge Co., Pittsburgh.

3500 tons, boiler plant, Albright, W. Va., to Fort Pitt Bridge Works, Pittsburgh.

3170 tons, section, Brooklyn-Queens, expressway, a state project, New York city, to Harris Structural Steel Co., that city.

1730 tons, hangars, Port Authority of New York, at Newark, N. J., airport, to American Bridge Co., Pittsburgh.

1500 tons, cosmetic plant, Helena Rubenstein, Roslyn, N. Y., to Bethlehem Steel Co.

1325 tons, three additional units, Wynnewood apartments, Wynnewood, Pa., to Bethlehem Steel Co.

1000 tons, plant addition, Doehler-Jarvis Corp., Pottstown, Pa., to Frank M. Weaver & Co., Lansdale, Pa.

1000 tons, Pennsylvania railroad bridge, Kearney, N. J., to American Bridge Co., Pittsburgh.

920 tons, contract 2, steel superstructure, Aroostook river bridge, Caribou, Me., to Pittsburgh-Des Moines Steel Co., Pittsburgh, $379,430.20.

875 tons, scale manufacturing plant, Fairbanks, Morse & Co., near Kansas City, Mo., to Allied Structural Steel companies, Chicago; Stone & Webster Engineering Corp., Boston, engineer-contractor; also 160 tons reinforcing bars.

750 tons, laboratory, Cornell University, Ithaca, N. Y., through White Construction Co., New York, to Bethlehem Steel Co.

650 tons, plant addition, Parrish Pressed Steel Co., Reading, Pa., to Belmont Iron Works, Eddystone, Pa.

500 tons, transmission towers, Boston Edison Co., Sudbury, Mass., to American Bridge Co., Pittsburgh.

470 tons, Pennsylvania Railroad bridge, Wilmington, Del., to Morris-Wheeler & Co., Philadelphia.

400 tons, control tower, Idlewild Airport, New York, to Lehigh Structural Steel Co., Allentown, Pa.

370 tons, building, Park avenue and 131st street, New York, to Dreier Structural Steel Co. Inc., Long Island City.

300 tons, also reinforcing, six story storage warehouse, Sick's Spokane brewery, Spokane, Wash., to Union Iron Works, Spokane, Wash.

300 tons, power line towers, river crossing, North Weymouth, Mass., to Bethlehem Steel Co.

300 tons, store building, Manhasset, Long Island, to Bethlehem Steel Co.

250 tons, steam station, Carolina Power & Light Co., Goldsboro, N. C., to Fort Pitt Bridge Works, Pittsburgh.

250 tons, telephone building, Peekskill, N. Y., to Grand Iron Works, New York.

250 tons, 163-foot, 3-span rolled beam bridge, Darien, Conn., to Bethlehem Steel Co.; Paul Bacca & Son, Inc., Stamford, Conn., general contractor.

240 tons, warehouse addition, Lansdale Tube Co., Lansdale, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

225 tons, steam station, Lumberton, N. C., to Ingalls Iron Works, Birmingham.

200 tons, addition to United Air lines hangar, Seattle-Tacoma air field, to Pacific Car & Foundry Co., Seattle.

188 tons, bridges No. 1977 and No. 2094, Nicollet county, Minnesota, to American Bridge Co., Pittsburgh.

175 tons, addition, acid recovery plant No. 2, American Viscose Co., Fredericksburg, Va., to Belmont Iron Works, Eddystone, Pa.

155 tons, bridge No. 6659, Itasca county, Minnesota, to American Bridge Co., Pittsburgh.

150 tons, repairs to bridge over Kentucky river, Frankfort, Ky., to Midland Structural Steel Corp., Hammond, Ind., for fabrication by Allied Structural Steel Co's.

150 tons, boiler supports, North Hudsonville, Ill., to American Bridge Co., Pittsburgh.

150 tons, warehouse, Glendale, N. Y., to a Brooklyn, N. Y., fabricator.

145 tons, school construction, Darien, Conn., to American Bridge Co., Pittsburgh.

110 tons, public construction, Norfolk, W. Va., through Merritt-Chapman & Scott, New York, to Bethlehem Steel Co.

100 tons or more, junior high school, Holyoke, Mass., to Haarmann Steel Co., Holyoke; M. J. Walsh & Sons Inc., Holyoke, general contractors.

Unstated, military award for winches, to Skagit Steel & Iron Works, Sedro-Woolley, Wash., $44,744.

STRUCTURAL STEEL PENDING

1500 tons, power stations, Republic Steel Corp., Cleveland; bids Dec. 20.

1068 tons, state bridge work, Montgomery county, Pennsylvania; bids Dec. 27.

1000 tons, Eielson power plant, Alaska; Peter Kiewit Sons Co. and Morrison-Knudsen Co., Seattle, low, $4,224,445 to U. S. Engineer, Anchorage, Alaska.

1000 tons, steel ribs Eklutna tunnel, Alaska; bids to Bureau of Reclamation, Denver, probably in March.

831 tons, state bridge work, schedule 1, and 611 tons schedule 2, Allegheny county, Pennsylvania; bids Dec. 28.

700 tons, building, Sylvania Electric Products Inc., New York; bids Dec. 12.

605 tons, state bridge work, Lehigh county, Pennsylvania; bids Dec. 27.

400 tons, plant addition, Heintz Mfg. Co., Philadelphia; bids closed Dec. 14.

350 tons, also sheets and plates, for Alaska Railroad; bids in to Federal Supply Services, Seattle, Dec. 11.

300 tons, also reinforcing, 766-foot highway bridge, Yellowstone county, Montana; award to W. P. Roscoe Co., Billings, Mont., $185,864.

200 tons, high school, Snowhill, Md.; bids Dec. 12.

200 tons, Du Pont plant expansion, Gibbstown, N. J.; bids closed.

165 tons, 70-foot square span composite steel girder bridge, Darien, Conn.; bids Dec. 18, Hartford; also 80 tons reinforcing bars.

120 tons, four steel stringer bridges, Cummington-Goshen, Mass.; bids Dec. 19, Department of Public Works, Boston.

100 tons, Pennsylvania Railroad bridge, Millerburg, O.; bids closed Dec. 13.

100 tons, bridge project, Anchorage-Seward

highway, Alaska; award to Manson-Osberg Construction Co., Seattle.

100 tons, two steel auto transfer bridges, Indian Island naval ordnance depot, Washington state; Cotton Engrg. & Shipbuilding Co., Port Townsend, low.

Unstated, take-off structures, Hungry Horse power plant, Montana; bids to Bureau of Reclamation, Denver, Jan. 2.

Unstated, two 106-foot highway spans, Dawson county, Montana; general award to Holm Construction Co., Glendive, low $90,195; also 106-foot bridge, Yellowstone county, to Barry O'Leary, Billings, low, $49,500.

Unstated, 239 foot bridge for Alaska Railroad; bids to Federal Supply Service, Seattle, Dec. 20.

Unstated, central heating and power plant, Fort Richardson, Alaska; bids to U. S. Engineer, Anchorage, Jan. 10.

Unstated, 29 steel transmission towers ,extensions and special; bids to Bonneville Power Administration, Portland, Oreg., Dec. 20.

Unstated, Army warehouse, McNary dam project; bids to U. S. Engineer, Walla Walla, Wash., Jan. 10.

Unstated, fixed wheel gates, Columbia Basin project; bids to Bureau of Reclamation, Denver, Jan. 4.

REINFORCING BARS . . .

REINFORCING BARS PLACED

200 tons, business administration building, University of Tennessee, Knoxville, Tenn., to Wilson-Weesner-Wilkinson Co., Knoxville; J. M. Dunn & Son, Knoxville, general contractors.

200 tons, grain elevator addition, Port of Tacoma, to Bethlehem Pacific Coast Steel Corp., Seattle.

130 tons, junior high school, Holyoke, Mass., to U. S. Steel Supply Co., Boston; M. J. Walsh & Sons Inc., Holyoke, general contractors.

100 tons, Washington state highway project at Centralia, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

4500 tons, Seattle viaduct; bids to Olympia, Jan. 9.

4100 tons, 14-mile and 15-mile reaches, also 3200-foot concrete siphon, Potholes east canal, Columbia Basin project; bids to Bureau of Reclamation, probably in March.

2000 tons, military barracks, Alaska; plans out; bids soon.

1200 tons, Eklutna power plant tunnel, Alaska; bids to Bureau of Reclamation, Denver, probably in March.

850 tons, mat reinforcement (alternates 10 and 13-foot lengths), three expressways, Connecticut; bids direct, Dec. 18, Hartford.

753 tons, state bridge work, schedule 1, and 109 tons, schedule 2, Allegheny county, Pennsylvania; bids Dec. 28.

126 tons, state bridge work, Berks county, Pennsylvania; bids Dec. 28; also 872 tons of fabricated structural steel.

Unstated, viaduct approaches, Willamette Oregon state bridge, Marion and Polk counties; bids to Highway Commission, Portland, Oreg., Dec. 20.

Unstated, four reinforced concrete state bridges, Josephine county, Oregon; bids to Highway Commission, Portland, Oreg., Dec. 19.

PLATES . . .

PLATES PLACED

500 tons, oil storage tank, Patterson Oil Terminal Inc., Paulsboro, N. J., to Bethlehem Steel Co.

230 tons, oil tank, Shell Oil Co., Wilmington, N. C., to Bethlehem Steel Co.

Unstated, 29 storage tanks for Sick's Spokane brewery, Spokane, Wash., to Pflander Co., Rochester, N. Y.

PLATES PENDING

2000 tons, penstock liners, Ross dam, Seattle

Just because Joe enjoys a good stogie, he shouldn't assume Mary enjoys one, too!

And just because one bearing is best lubricated by one particular grade of oil, you shouldn't assume that the same oil is best for *all* bearings on that machine. In many cases it isn't.

OIL CUPS permit you to lubricate each bearing with the oil best suited to that bearing—thus prolonging bearing life, reducing maintenance costs, cutting down-time, boosting production. And oil cups fortunately *cost very little.*

Gits oil cups have been the standard for industry for more than 40 years. Gits Bros. has the largest selection of oil cups available anywhere. Call on Gits Bros. for a prompt, efficient solution to your lubrication problems.

Write for free Price Guide Catalog

GITS BROS. MFG. CO.

1844 S. Kilbourn Ave. • Chicago 23, Ill.

Brinell Testing

at PRODUCTION LINE SPEEDS

Simply set tolerance hands on the lower dial of this Brinell Hardness Tester to the desired limits and the operator merely notes that the indicator points stop within them.

No grinding or preparation of parts is necessary. Foot operation permits free use of both hands. Tests are completed as rapidly as the operator can handle the parts.

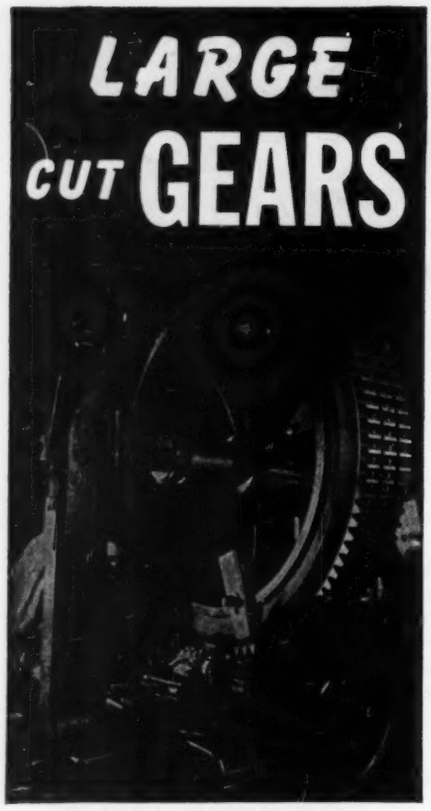
Standard Brinell test loads are used . . . machine is motor-driven . . . loads are applied hydraulically . . . round and flat parts are handled equally well.

GET FURTHER DETAILS

WRITE FOR LITERATURE

DETROIT TESTING MACHINE CO.

9390 GRINNELL AVENUE • • • DETROIT 13, MICH.



Cutting three identical spur gears simultaneously at Simonds Gear.

Cut Gears for Industrial Needs!

For special gears in larger sizes—exact duplicate gears for replacements—for every heavy-duty industrial gear application—look to SIMONDS GEAR where specialty gears for heavy industry have been a custom service for more than 50 years. Within easy shipping distance of many heavy industry plants—with a personalized service designed to meet your most exacting specifications—SIMONDS GEAR provides an unusually prompt and efficient service on even the most unusual gear requirements. Sizes range up to 145" dia. in all popular gear-making materials. Send your inquiry today and get acquainted with SIMONDS GEAR Service.

SPUR GEARS
BEVEL GEARS • MITRE GEARS
WORMS • WORM GEARS
RACKS • PINIONS

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

SIMONDS GEARS
THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

Skagit project; Consolidated Western Steel Corp., Seattle, low $979,275.

100 tons, plus, penstocks for California Oregon Power Co.; bids to Medford, Oreg., Dec. 20.

Unstated, 40,000-foot, 60-inch water supply line; $2,350,000 project, Seattle water system; plans in preparation, bids in January.

Unstated, 3200-foot siphon, Potholes east canal Columbia basin project; bids in March to Bureau of Reclamation, Denver.

Unstated, five fuel and water storage tanks, for Atomic Energy Commission, Idaho Falls, Idaho; plans out, bids soon.

Unstated, 8500 lineal feet H-piling, second unit Seattle viaduct; bids to Olympia, Wash., Jan. 9.

PIPE . . .

STEEL PIPE PLACED

1500 tons, welded pipe, Philadelphia Gas Works Co., to Bethlehem Steel Co.

CAST IRON PIPE PENDING

175 tons, 12, 8 and 6 inch, alternatives invited; bids to C. F. Christian, city clerk, Port Townsend, Wash., Dec. 19.

100 tons, 7000 feet, 8, 6 and 4 inch water pipe; bids to Lewiston, Idaho, Dec. 18.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Paulista of Brazil, twelve 1600-hp road-switching units, to American Locomotive-General Electric Companies, Schenectady, N. Y.

LOCOMOTIVES PENDING

Central of New Jersey, 31 diesel-electric units, comprising sixteen 1200-hp yard-switching units, fourteen 1600-hp transfer units and one 1000-hp road-switching unit; bids asked.

RAILROAD CARS PLACED

Chicago, Rock Island & Pacific, 3000 fifty-ton box cars, of which 2000 will be built by Pullman-Standard Car Mfg. Co., Chicago, and 1000 by American Car & Foundry Co., New York.

Gulf, Mobile & Ohio, 1000 fifty-ton box cars, 700 going to American Car & Foundry Co., New York, and 300 to Pullman-Standard Car Mfg. Co., Chicago.

Pennsylvania, 66 passenger cars, reported placed with the Worcester, Mass., shops of Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Central of New Jersey, 500 fifty-ton box cars; bids asked.

Orinoco Mining Co., subsidiary of United States Steel Corp., 700 ore cars, for use in Venezuela; bids asked.

FERROALLOYS

(*Contonued from page* 147)

Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Low-Carbon Ferrochrome: (Cr 67-72%.) Contract, carload, lump, bulk, max. 0.03% C 33.35c per lb of contained Cr, 0.04% C 31.25c, 0.06% C 30.25c, 0.10% C 29.75c, 0.15% C 29.50c, 0.20% C 29.25c, 0.50% C 29.0c, 1% C 28.75c, 1.50% C 28.60c, 2% C 28.5c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 MxD, bulk, 23.25c per lb of contained Cr, c.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, Carload, packed, 8 MxD, 16.10c per lb of alloy; 1 ton 16.95c; less ton lot, 18.15c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.00c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.0c per lb of contained silicon plus aluminum, 3" x down, delivered.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium, ton lot $1.10, less ton $1.12. Delivered. Spot add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.75 per lb of contained W; 2000 lb W to 10,000 lb W, $2.85; less than 2000 lb W, $2.97. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $3.65 per lb of contained W; less than 1000 lb W, $3.75.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 19.00c per lb of contained Si; packed 20.40c; ton lot 21.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.0c per lb of contained Si, carload packed 13.6c, ton lot 15.95c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered, Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 15.55c per lb of contained Si, carload packed 16.8c, ton lot 17.8c, less ton 18.95c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.85c, per lb of briquet, c.l. packaged 11.65c, ton lot 12.45c, less ton 13.35c, Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si) Contract, carload, bulk 6.75c per lb of briquet, c.l. packed 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—weighing approx 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c, c.l. packed 7.7c, ton lot 8.5c, less ton 9.40c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 21.0c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.).

Contrast, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.00 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3.10. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.20.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8 11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24%, P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.32; Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.14, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.

Handling BAGGED GOODS?

Do it FASTER — more EFFICIENTLY with a POWELL Job-Designed container . . .

Style 412
WHSE Stacking Unit

Container pictured here was Job-Designed by Powell to safely and efficiently transport and store bags of carbon black and synthetic rubber elements for a leading rubber manufacturer.

It affords easy accessibility to a single bag or a container full. Can be used as a bin. Speeds production and inventory. Keeps storeroom neat. Tiers to any desired height.

Powell Job-Designed equipment best suits the job, because it was built for the job. Powell representatives in principal cities.

Send inquiries to Dept. 312

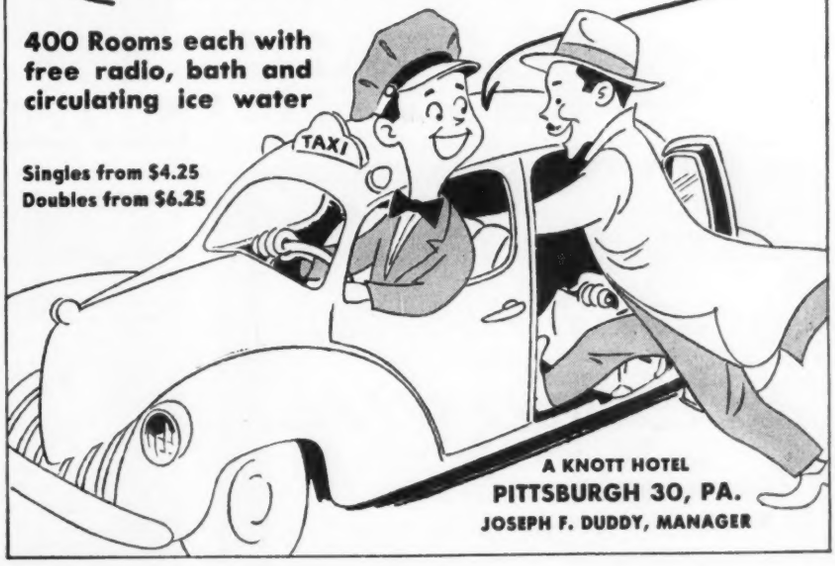
POWELL PRESSED STEEL SINCE 1920

THE POWELL PRESSED STEEL CO. • HUBBARD, OHIO
ORIGINATORS OF COLD FORMED ALL STEEL HANDLING EQUIPMENT
(In Greater Youngstown)

HANDIEST ADDRESS IN PITTSBURGH IS THE PITTSBURGHER HOTEL

400 Rooms each with free radio, bath and circulating ice water

Singles from $4.25
Doubles from $6.25

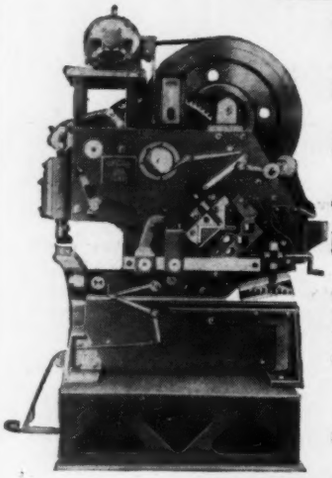


A KNOTT HOTEL
PITTSBURGH 30, PA.
JOSEPH F. DUDDY, MANAGER

WEBB STEELWORKER

Combination Shear, Punch, and Coper

5 Complete Tools in a Single Unit



1. Punch for plate, bars or structurals.
2. Cuts angles and tees with straight or miter cut.
3. Cuts off round and square bars.
4. Shears plates and bars.
5. Coping or notching attachment.

For diversified shop work or high production output, this all-purpose machine is always in complete readiness to do any of above operations.

Write for Illustrated Literature and Prices Today.

Mfgrs. of PLATE BENDING ROLLS and INDUSTRIAL WEIGHING EQUIPMENT

THE **WEBB** CORP.

WEBB CITY, MO., U. S. A.

Since 1881

There's ever so much to see and do in

Baltimore!

Historic shrines, Maryland cooking, horse racing, yachting on the Chesapeake . . . and a hundred and one other fascinating attractions! The city's newest and largest hotel is located a short distance from everything you want to see . . . in the middle of the business, shopping and amusement districts.

LORD BALTIMORE HOTEL

BALTIMORE, MARYLAND

Lewis **TRAVEL-CUT** *Wire*

STRAIGHTENING and CUTTING MACHINES

AUTOMATIC ··· HIGH SPEED ··· HEAVY DUTY

Machines for 1/16" to 3/4" Rod. Rounds and Shapes.

THE LEWIS MACHINE CO., 3450 E. 76th St., Cleveland, Ohio

DIFFERENTIAL

STEEL CAR CO., FINDLAY, OHIO

Air Dump Cars, Mine Cars, Locomotives, Lorries AXLESS Trains and Complete Haulage Systems

HIGH SILICON IRON.

"JISCO"

SILVERY PIG IRON

A Blast Furnace Product made from only Virgin Ores

THE JACKSON IRON & STEEL CO. · JACKSON, OHIO

WHEELING STEEL CORPORATION

WHEELING, WEST VIRGINIA

COP-R-LOY PIPE-SHEETS

Ductilite

THE MODERN TIN PLATE

LA BELLE CUT NAILS

WHEELING STEEL

COPPER—BRASS—BRONZE

PERFORATED

TO YOUR REQUIREMENTS

PERFORATED METALS

FOR ALL INDUSTRIAL USES

SEND FOR CATALOG No. 35

ARCHITECTURAL GRILLES

DIAMOND MFG. CO.

BOX 32 WYOMING, PA.

Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

California

Rohr Aircraft Corp., Chula Vista, Calif., producer of ready-to-install aircraft power plant sections, increased its work week to 6 days, 48 hours to meet accelerated schedules.

California

Binks Mfg. Co., Chicago, purchased the Vernon, Calif., plant formerly occupied by Allegheny Ludlum Steel Corp., Pittsburgh.

Colorado

Johnson Corp., Three Rivers, Mich., manufacturer of steam specialties and boiler room equipment, appointed Thermal Industrial Engineering Co., Denver, as representative in Colorado, Montana, eastern Wyoming, western Nebraska, western Kansas, and in northern New Mexico.

Delaware

Holster Steel Corp.—iron—was chartered by the secretary of state's office, Dover, Del. Capital of the firm is listed at $250,000. Prentice-Hall Corporation System, Dover, is serving as the principal office.

Centro Corp.—machinery—filed a charter of incorporation with the secretary of state's office, Dover, Del. Capital of the firm is listed at $500,000. U. S. Corporation Co., Dover, is serving as the principal office.

Illinois

Acme Steel Co., Chicago, published the first issue of *"Confab,"* the company's quarterly magazine for users of strip steel products. The new publication replaces *"Process News,"* which dealt with protection of shipments in transit. The word "Confab" was selected since it suggests a "friendly chat and meeting of minds," says Carl J. Sharp, president. Featured in the first issue are stories of pharmaceutical shipments to Korea, safe packing for huge construction arches, and a roundup of materials handling methods in the lumber industry. Also included are hints on proper stitching and strapping practices, a chronicle of company doings and case histories told in capsule style. Copies of this publication can be obtained from the advertising and sales promotion department, Acme Steel Co., 2840 Archer Ave., Chicago 8.

Illinois

K. W. Battery Co., Skokie, Ill., awarded the general contract for the erection of a factory building to Northern Builders, Chicago. Estimated cost is $500,000. Frank S. Musser, Chicago, is the architect.

Iowa

Oliver Corp., Chicago, awarded the contract for an addition to its foundry in Charles City, Iowa, to Wildes Construction Co., Waterloo, Iowa. Estimated cost is $151,000.

New Jersey

Optimus Equipment Co., Matawan, N. J., purchased the trademarks, patents, sales rights, etc. of Circo Products Corp., Cleveland, manufacturer of metal parts cleaning and degreasing machinery. Melville Morris, president of Optimus, says the Circo manufacturing operations will be moved to Matawan immediately, where the manufacture and sale of Circo equipment and degreasers will be carried on as the Circo Division of Optimus. Optimus Equipment Co. manufactures metal parts washers, vapor degreasers, dryers, and pickling machinery for the industrial field. Optimus is a subsidiary of Hanson-Van Winkle-Munning Co., Matawan, large manufacturer of electroplating equipment and supplies.

New York

Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York, completed a Kodachrome sound motion picture which tells the story of a new process for welding aluminum, stainless steel, bronzes and monel. The film was designed for showing to nontechnical as well as technical groups.

New York

Luria Bros. & Co. Inc., one of the major brokers and suppliers of scrap, moved its New York offices from the Woolworth Bldg. to 100 Park Ave. Bldg. These offices, under the management of William Hundt and Ralph Ablon, are organized with the additional facilities in keeping with their increased operations. The new telephone number is Murray Hill 9-5500.

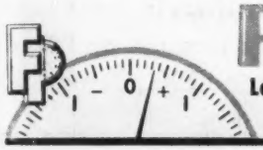
New York

Veeder-Root Inc., Hartford, Conn., world's largest manufacturer of counting and computing devices, opened a

Check sheet stock for THICKNESS before it jambs your dies

Make sure sheet or strip stock being released to each stamping, blanking, or drawing operation is the correct thickness for the job. Take a quick thickness check with Federal Model 644. This handy gage is specially designed for speed and accuracy. Spring-loaded jaws clamp the stock . . . locate the gage in the proper vertical position to take the measurement. The checking operation is extremely simple. Just squeeze the grip, insert the stock, release the grip, and take the reading on the dial. That's all there is to it. Write today for complete information and price of Federal Model 644. FEDERAL PRODUCTS CORP., 2112 Eddy St., Providence 1, R. I.

FEDERAL Model 644
Indicator Graduated in .001"
Indicator Range .200"
Maximum Throat Depth 3"

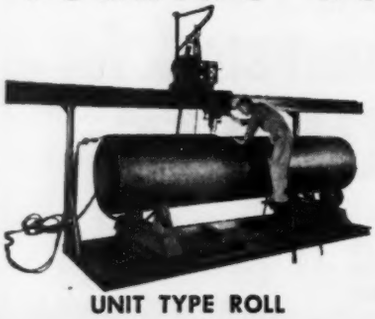


FEDERAL
Largest manufacturer of indicating type gages . . . exclusively.

TURNING ROLLS

REED

JIGS & FIXTURES



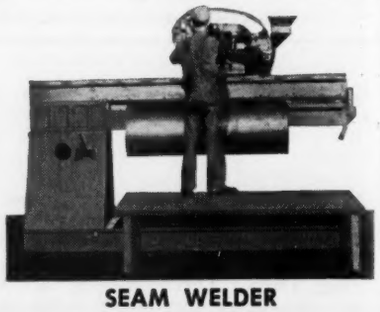
UNIT TYPE ROLL

FOR AUTOMATIC WELDING

THE ONLY COMPLETE LINE OF JIGS AND FIXTURES BUILT EXCLUSIVELY FOR THE TANK FABRICATING INDUSTRY.

- BENDING ROLLS
- TURNING ROLLS
- TRACK SUPPORTS
- GANTRIES
- SEAM WELDERS
- OFFSET FORMERS
- ASSEMBLY PRESSES
- FIT-UP ROLLS

COMPLETE INFORMATION MAILED AT YOUR REQUEST



SEAM WELDER

REED ENGINEERING COMPANY CARTHAGE, MISSOURI, U. S. A.

RYERSON STEELS *in Stock*

Thousands of kinds, shapes and sizes on hand. For quick shipment of any requirement, call our nearest plant.

Joseph T. Ryerson & Son, Inc.

Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

HOT DIP GALVANIZING

JOS. P. CATTIE & BROS., INC.

Gaul & Letterly Sts., Philadelphia 25, Pa.

GALVANIZED PRODUCTS FURNISHED RE 9-8911 PICKLING & OILING

SAVE MONEY

ON PRESSED STEEL PARTS!

If you want to save money on pressed steel parts, call on Budd's wide experience in steel stampings of all kinds.

Like hundreds of manufacturers, you can take advantage of Budd "know-how" to lower production costs on blanks and stampings, in both regular grade and stainless steel. At your service Budd places the best-equipped machine shop—for both large and small dies—on the Atlantic seaboard.

Write today, sending a sample, blueprint or pencil sketch of your product, and let us quote you a price.

BUDD

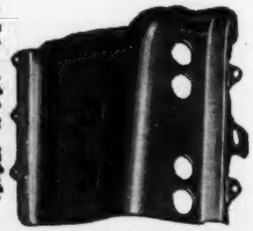
THE BUDD COMPANY

Specialty Dept. 16 Philadelphia 32, Pa.

FOR ECONOMY—

FOR ACCURACY—

FOR DEPENDABILITY—



Specify WHITEHEAD Stampings

Suppliers to American industry for 46 years.

WRITE FOR YOUR CATALOG!

WHITEHEAD STAMPING CO.

EST. 1903

1667 W. LAFAYETTE BLVD., DETROIT 16, MICH.

WISE ECONOMY Results from WISE SELECTION of cutting fluids

D.A. Stuart Oil CO.

EST. 1865 LIMITED

2735-37 SOUTH TROY ST., CHICAGO, 23

PERFORATED METALS OF EVERY DESCRIPTION

Promptly made to your exact specifications. We can furnish any size or style of perforations desired

CHICAGO PERFORATING CO.

2443 W. 24th Place Virginia 7-6767 Chicago 3, Ill.

IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

direct factory branch in New York by taking over the office formerly occupied by its distributor, J. T. Quinlan Co. Mr. Quinlan will remain with Veeder-Root in an advisory capacity, says A. E. Kallinich, vice president and general sales manager of the Hartford firm which as yet has named no manager for the New York office.

New York

American Radiator & Standard Sanitary Corp., Pittsburgh, filed plans with the city of Buffalo to erect a warehouse building at 25 Rano St. Estimated cost is $200,000.

Ohio

Noma Electric Corp., New York, acquired Toledo Desk & Fixture Co., Maumee, O., manufacturer of kitchen cabinet equipment. Henri Sadacca, president, said the acquisition will round out Noma's present line of home equipment which is manufactured by Estate Stove Co.

Gregon

Expenditure of about $300,000 for expansion and improvement of manufacturing facilities at the **California Cotton Mills Division** plant at Salem, Oreg., was announced by J. R. Millar, president, National Automotive Fibres Inc., Detroit. The company also purchased and installed a unit of new English-made flax textile machinery of the latest and most modern type, which is specifically designed to manufacture fine yarns from flax tow.

Pennsylvania

Weldon Tool Co., Cleveland, announced the appointment of Harris Pump & Supply Co., Pittsburgh, as its distributor in that territory.

Canada

Industrial Chemicals Division and **Coating Resins Department** of the Plastics and Resins Division, **American Cyanamid Co.,** New York, will distribute its products beginning Jan. 1, 1951, throughout Canada by its subsidiary, **North American Cyanamid Ltd.,** Niagara Falls, Ont. Sales offices for these two units will be located in Montreal, Que., and in Toronto, Ont. An option has been taken in Montreal on a proposed site for a building or buildings which would house all sales offices and warehouse facilities, as well as manufacturing operations of the company's Lederle Laboratories Division. The company hopes to have construction finished by the end of 1951. North American Cyanamid operates a plant at Niagara Falls, Ont.; the Welland Chemical Works, Port Robinson, Ont.; and a large limestone quarry.

NEA

QUITE A CHARGE: Westinghouse engineer John J. Clark gets his Christmas lighting effects at 3 million volts. Seated at the wheel of one of Kaiser-Frazer's Henry J. models, he is within two feet of a 3-million volt stroke of man-made lightning. He explains that any occupant of a metal-bodied car is protected from lightning because there are no electrical effects in a completely enclosed metal cage. Michael Faraday first demonstrated the principle a century ago. A giant surge generator in the background produces the lightning to help Westinghouse engineers develop and test insulators and protective equipment that guard power lines in electrical storms

available now!

High Performance BERYLCO BERYLLIUM COPPER

Metallurgically Controlled at Mill.

5 lb. Pigs

CASTING INGOTS

Berylco 20C, Berylco 275 } High Hardness After Heat Treatment

Berylco 10C, Berylco 50C } High Electrical Conductivity After Heat Treatment

Much helpful information is available on specific properties, applications and casting methods by writing direct to

The BERYLLIUM CORPORATION

READING 7, PENNSYLVANIA

The Cleveland Steel Tool Co.

• PUNCHES • DIES • CHISELS • RIVET SETS •

IF IT'S RIVETED YOU KNOW IT'S SAFE

WE FEATURE SPECIAL PUNCHES & DIES

660 E. 82nd ST., CLEVELAND, O.

OHIO LOCOMOTIVE CRANES

25 TO 40 TON CAPACITY

GASOLINE • DIESEL ELECTRIC • STEAM

THE OHIO LOCOMOTIVE CRANE CO.

BUCYRUS, OHIO

THE BELMONT IRON WORKS

STRUCTURAL STEEL—BUILDINGS & BRIDGES

RIVETED—ARC WELDED Cable Address—Beliron

Engineers—Fabricators—Erectors—Contractors—Exporters

Shops—Philadelphia—Eddystone—Royersford

Main Office: Phila. 46, Pa.

New York Office—44 Whitehall St., N. Y. 4, N. Y.

Certified Steel Abrasives

FOR USE IN BLAST CLEANING EQUIPMENT

SAMSON STEEL SHOT

ANGULAR STEEL GRIT

PITTSBURGH CRUSHED STEEL CO., PITTSBURGH, PA.

STEEL SHOT & GRIT CO., BOSTON, MASS.

EQUIPMENT--MATERIALS

USED EQUIPMENT FOR SALE

Two (2) MORGAN 22" 4 block, 4 draft continuous WIRE DRAWING MACHINE with roll pointers.

One (1) DREVER type 100 CFH AMMONIA DISSOCIATOR 3.5 KW, 110 V, single phase, 60 cycle. Drever Company, Philadelphia, Pa.

One (1) 22" 6 double block wood frame take up 1-15/16" spindles, 1-15/16" shaft, 36" x 8" steel pulley drive. Lewellen Transmission jack-shaft.

WIRE DRAWING BENCHES:

Two (2) 17 block sections 8" blocks, 16" centers, direct ratio for size 20 to 40 Turner, Vaughn, Taylor. (No blocks for these).

One (1) 12 block section for 8", 12" or 16" blocks, 27" centers, direct ratio. (No blocks for these), for dig. #15 to #19 gauge.

Two (2) 3 block sections 16" or 22" blocks 54" centers, 2-1 ratio, 2" spindles, 20" bevel gears, 2-15/16" drive shafts (No blocks for these).

Two (2) 4 block sections 16" or 22" blocks 54" centers, 2-1 ratio, 2" spindles, 20" bevel gears, 2-15/16" drive shafts (No blocks for these).

One (1) Fidelity 2 head double end screw traverse SPOOLING MACHINE #11413, each unit with four 7/16" removable spindles—equipped with 6 driving collars for wood spools ¼ to 1# of wire, 2 independent heads for 12 small spools with 1⅝" traverse or 8 large spools. Automatic measuring on each unit.

Nine (9) 20 draft SUPERIOR continuous draft WIRE DRAWING MACHINES with spooling attachments for drawing 8" coils or on spools. Finish size #25 to #40.

One (1) SUPERIOR WIRE PULLER and DIE STRINGER.

One (1) SUPERIOR WIRE POINTER.

Three (3) Fig. 674-5 OIL FILTERS—Bowser, Inc., Ft. Wayne, Indiana, with three 0 to 100# pressure gauges for filtering dig. oil.

THE SENECA WIRE & MFG. CO.

Fostoria, Ohio

STAINLESS STEEL BARS OFFER

SIZE	TYPE	WEIGHT-LBS.
13/64" Rd.	416	2993
7/32" Rd.	416	3316
7/16" Rd.	440-F	2430
7/16" Rd.	403	2557
5/8" Rd.	410	3560
5/8" Rd.	430	8260
11/16" Rd.	440-F	8035
3/4" Hex.	416	8700

Dept. "J"

DEPENDABLE SALES CORP.

Johnson & Gold Sts., Brooklyn 1, N. Y.

Need STEEL SHEET PILING?

RENT IT! . . . "FASTER FROM FOSTER"

LARGEST STOCKS IN U. S.
All Lengths • All Sections
Also Corrugated Steel Sheet Piling

Foster's rental rates give you a low fixed expense for competitive bidding purposes.

Pile Hammers & Extractors For Rental
Rails•Track Accessories•Wire Rope•Pipe

L. B. FOSTER CO.

PITTSBURGH 30, PA. CHICAGO 4, ILL.
HOUSTON 2, TEX. NEW YORK 7, N.Y.

FOR SALE
PRECISION STEEL TUBING

Prime Material in Original mill boxes.
250,000 ft.— .138" O. D. x .022 Wall
NE 8630 in 14 ft. random mill lengths.
441,000 ft.— .274" O. D. x .006 Wall
SAE 1015. Random 10 ft. mill lengths.
26,340 ft.— .298" O. D. x .008 Wall
SAE 1015. Random 10 ft. mill lengths.

—REDUCED BELOW COST—

Dept. "BZ"

DEPENDABLE SALES CORP.

315 Gold Street, Brooklyn 1, N. Y.
Tel.—MAin 4-8437-8-9

FOR SALE—SACRIFICE
HEROULT ELECTRIC TILTING FURNACE

10 Ton capacity, complete with 2000 KVA transformer, reactor and motors, also bottom pour ladles, lifting bales, ingot molds, tongs, ladle stoppers, furnace brick and threaded carbon electric couplings. Will sell all or any part for less than 25% of its value.

ACORN IRON & SUPPLY COMPANY

Delaware Ave. at Poplar St. Philadelphia 23, Pennsylvania
Walnut 2-7070

850 GROSS TONS STEEL LANDING MAT

Pierced Plank Type
10' by 15"—10 gauge
Approx. 68 pounds per piece
Bundled for Export
AVAILABLE IMMEDIATELY

DULIEN STEEL PRODUCTS, INC.
9265 E. Marginal Way
Seattle 8, Wash.

ROLLING MILLS and EQUIPMENT

FRANK B. FOSTER, INC.
2317, OLIVER BLDG. PITTSBURGH 22 PA
Cable Address FOSTER Pittsburgh

BORING MILLS, 24"-36"-42"-52"-66"-72"
GRINDER, Centerless No. 3 Cin.
HAMMER, Nazel 5-N, 6" x 6", M.D.
KEYSEATERS, Nos. 1 and 2 Baker, M.D.
MILLERS, Plain Nos. 3 K & T and 4 Cin.
MILLERS, Vertical Nos. 3 & 4 Cin.
PIPE MACHINES, 4"-6"-8"-10"
SHAPER, 36" Morton Draw Cut

WEST PENN MACHINERY CO.
1210 House Bldg. Pittsburgh 22, Pa.

1—#4½ BLISS PRESS V-Belt Drive Dbl. Rl. Feed Ser. Ctr. Straight Side 1942.
1—#304 BLISS PRESS V-Belt Dr. Str. Side 1942.
1—#74½ BLISS PRESS 90 Ton O.B. "C" Frame W/M
1—25 Ton H&W Dieing Press 1½" Str. Dbl. Rd. Fd. Scr. Cutter.
1—HENDEY 20" Crank SHAPER Rap. Trav. M. D.
2—Wtby. Farrel Coin. Presses 125 Ton Cap.

—Wanted—

STEEL SHEETS, STRIP, BAR, WIRE, MACHINERY
SEABOARD STEEL CO., INC. New Haven, Conn.

WANTED—LATE TYPE
#0-#00 BROWN & SHARPE SCREW MACHINES

Also Steel Sheets, Strip, Coil, Bar, Wire, etc.
Write Box 179
STEEL, Penton Bldg., Cleveland 13, O.

16 Gauge Galvanized Sheets
25 ton-Prime

Fabricator wishes to trade for lighter sheets in Galv.—Black or Aluminum
Write Box 193,
STEEL, Penton Bldg., Cleveland 13, O.

MAKE IT A HABIT . . .

To read the classified pages of STEEL each week. You will find listed there surplus materials and used equipment for sale which may fill your requirements to a tee and save you much time and effort locating them.